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# THE BUILDER

INCORPORATING

"ARCHITECTURE" and "THE BRITISH ARCHITECT"

VOL. CLXXVIII MAY 26, 1950 No. 5597

## THIS WEEK'S NEWS

PAGE

*THE RESULTS are given of an investigation made by Mr. C. G. Stillman, F.R.I.B.A., Middlesex County Architect, to secure economy in expenditure on primary schools consistent with the latest educational requirements.* 699

*THE DESIGN prepared by Mr. Graham Dawbarn, C.B.E., for television buildings on the B.B.C.'s site at the White City has been announced. It is illustrated and described on page* 702

*MR. G. A. JELLICOE, F.R.I.B.A., the assessor, has announced his awards in the competition sponsored by the Guildford Borough Council for a new civic hall. The designs placed first and second are illustrated on page* 710

*THE GENERAL PURPOSES COMMITTEE of the L.C.C. is investigating the possibility "that the Council's form of contract might be adapted, without departure from its essential principles, so as to follow the wording used in the R.I.B.A. form."* 719

*ACCORDING to the recently published Second Report of the Girdwood Committee the average cost of the traditional local authority three-bedroom house completed in October, 1949, was £1,321, compared with £1,242 in October, 1947.* 722

GUILDFORD CATHEDRAL. A recent photograph of the Diocesan Arms over St. Ursula's Porch. The late Eric Gill, Sculptor. Edward Maufe, R.A., Architect.

## HOUSE-BUILDING COSTS

THE Ministry of Health Committee of Enquiry into House-Building Costs has produced a Second Report.* We reproduce a summary of this Committee's conclusions on page 722. It is just over eighteen months ago that the Committee produced its First Report, upon which we commented somewhat critically at the time. Our views at that time were that building costs must be reduced; alternatively rents or subsidies or both must be increased. We saw no justification for increasing subsidies; indeed, we drew prominent attention to the conclusion of the Committee that "A large part of the cost to-day is being borne by subsidies, which on all the houses built with subsidy or projected up to the end of March, 1948, already amount to some 7½ million pounds per annum for a period of 60 years. If the rate at which local authority houses have been completed during the first quarter of 1948 is maintained, and this number is brought into programme each year, the cost of subsidies will increase cumulatively by about £3.3 million per annum for as long as subsidies remain at the 1947 level. While we agree that housing must have a high priority among the claims on the available National resources, we consider that in any review of the housing programme the financial implications must be borne prominently in mind."

So far from recording any reduction in the cost of building, the Second Report of the Committee estimates an increase as between 1947 and 1949 of £79, and the Committee has increased its estimate of the cost of land and site development by £36. The comparable figures are as follows:—

| | 1947 £ | 1949 £ |
|---|---|---|
| Building cost .. .. .. .. .. | 1,242 | 1,321 |
| Cost of land and site development .. .. | 122 | 158 |
| Quantity Surveyor's fees and architect's fees (or cost of corresponding L.A. Staff) .. | 36 | 36 |
| | £1,400 | £1,515 |

The increase in cost during these last two years, £115, adds about £4 per annum to the charges which must be borne by the local authorities; alternatively rents should be increased by 1s. 7d. per week. Rents are not increased, therefore this additional burden falls upon the rates. Apart from the capital cost of construction, another factor which must be taken into account in computing rentals is the cost of maintenance. The Committee have allowed in their computations for both 1947 and 1949 an annual cost of repairs, management, etc., of £10, but it is pointed out in the Report that "there are also indications that since 1947 there has been a rise in the average cost of repairs, management, etc. (which we have taken at £10 a year), and it will be appreciated that any increase in the amount of the annual provision for these items has a direct effect on rents (e.g., £1 per annum increase represents an addition to rent of nearly 5d. per week)." If, as the foregoing quotation shows, there are already indications of a rise in the cost of repairs since 1947, at a period when the houses are relatively speaking new, how far short will the Committee's estimate of £10 fall when the houses are 20 years old or, even more so, when (long before the capital costs are liquidated in 60 years' time) they become decrepit?

The Committee point out: "The devaluation of sterling

* "The Cost of House-Building." Second Report of the Committee of Enquiry appointed by the Minister of Health. H.M.S.O. 1s. 3d. net.

in September, 1949, may lead to some increase in cost of the majority of houses completed later. In this connection it is relevant to note that the National Working Rules of the Building Industry provide for annual adjustments of wage rates in sympathy with movements in the index of retail prices; that prices of non-ferrous metals, although not yet stabilised, have increased as a result of devaluation; and that as under present conditions some 20 to 25 per cent. of the country's supplies of soft wood come from North America it may be difficult to avoid an increase in prices of particular classes of softwood. . . . We see no reason to depart from our previous conclusion that house-building costs will not fall appreciably unless the general level of prices and wages falls."

As in its First Report, the Committee break down the cost of building under the headings of labour, materials, on-cost and profit and account for the difference in to-day's building costs over 1947 as follows:—

| | £ |
|---|---|
| Cost of land and site development .. .. .. | 36 |
| Increase attributable to rise in general level of house-building costs.. .. .. .. .. .. | 104 |
| Increase attributable to increased size of the average 1949 house .. .. .. .. .. .. | 16 |
| | 156 |
| Saving attributable to simplified design and specification .. .. .. .. .. .. .. | 41 |
| | £115 |

Appreciating that the responsibility for decisions regarding housing policy must rest with the Government and that cost, although important, is only one single factor that must be considered in determining housing standards, the Committee see no reason to modify the conclusions of their First Report and indeed repeat the warning which was uttered two years ago. Then the Committee considered it appropriate to recommend that policy regarding standards of accommodation and equipment should be reviewed in the light of conditions then prevailing. They now emphasise this view and point out that, as it is unlikely that there will be any general reduction in the level of house-building costs, the size of the houses should be reduced from the present accepted standard. The Committee think this standard too high and to result from the Ministry's method of examining tender prices by reference to the cost per sq. ft. of floor area rather than to the total cost of the house. In this connection they have observed that houses incorporating the room sizes laid down in the 1949 Housing Manual can be designed within a total floor area of 50 sq. ft. less than the minimum of 900 sq. ft. (excluding out-building) adopted by the Ministry of Health in November, 1945, and at least 90 sq. ft. less than the average size of houses approved during the last two years.

Attention is drawn, rightly, if somewhat belatedly, to the saving in cost per house that can be secured by building houses in larger contracts and the Committee recommend that where circumstances permit local authorities should plan their housing programmes accordingly. This is a most sensible recommendation, but it brings us up against one of the main faults of a so-called planned housing programme. The total housing programme of the country is restricted to 200,000 and every local authority, no matter how small, wants its just share. This reduces the units or contracts in many instances to a size which it is uneconomical to build. Even in the case of the larger towns the various wards or geographical areas want due consideration. In the result a housing contract sufficiently large to be capable of the most economic organisation is the exception rather than the rule.

As this is so for local authority contracts, which are responsible for at least 80 per cent. of the total allocation, how much more difficult is it for private enterprise, which has to limit its share to the remaining 20 per cent.? Not only is private enterprise penalised by this arbitrary allocation; it has to face up to the difficulties that result from the piecemeal issue of licences to the customer instead of to the industry. Even so, private enterprise is quicker (a fact conceded by the Girdwood Committee) and there is evidence that it is cheaper; in one West London borough local authority houses are costing about £150 more than identical houses at present being built by private enterprise. A return to more equitable competition would be a healthy sign; it would be welcomed by the whole industry, contractors and private enterprise alike.

## COUNTY OF LONDON PLAN

IT is surprising that the announcement (reported in our issue of May 5) of the Minister of Town and Country Planning that Ring Road A is to be abandoned has not evoked more comment. Possibly the apparent lack of interest in so momentous a decision may in part be due to a feeling of relief because those responsible have at last, after seven years of thought, made up their minds on at least one major item of this road plan.

Three principal ring roads, A, B, C, were provided for in the County of London Plan, 1943, and the greatest of these was B, which was designed " to facilitate the circulation of dock traffic around central London and between the docks, decentralised markets, goods stations, marshalling yards and industrial centres, notably those on the western approaches to London." Ring Road A was planned to become " the main circulatory ring road for central London traffic ; it co-ordinates the main railway termini, utilises existing roads for long sections of the route, and is situated on the periphery and forms the boundary of the Empire, cultural and commercial core of London." C was to be an outer ring road, largely on the line proposed in the Bressey-Lutyens Road Plan of 1937.

When the County of London Plan was presented, the immediate reaction of the Ministry of Transport, then the Ministry of War Transport, as revealed in the observations it sent to the L.C.C., was that Ring Road B was too far from the centre to fulfil the purpose of relieving congestion and promoting freer circulation of traffic in London. Consequently, the Ministry gave first place to a ring road in the approximate position of A, designed to provide for free flow to the greatest extent practicable in that position, and for this purpose to be constructed as far as practicable in cutting or tunnel.

There were obviously grounds for weighty discussion as to the relative functional importance of Ring Roads A and B, although pending a decision the L.C.C. and the Metropolitan Boroughs, respectively responsible for preparing and administering a plan for the County, would make little progress in shaping the future of the areas for which they were responsible. Now, after seven years, they are told by the Government that Ring Road A has been abandoned, mainly on grounds of the disruption it would cause until completed, and its cost.

Both these considerations are of great importance, but they were obvious from the beginning and although we are told what would have been the cost of improvement, nothing is said about the colossal annual wastage of time and money caused by the evergrowing congestion which the Ring Road would do much to alleviate. From the dawn of the motor age, more than 50 years ago, weighty commissions, boards, and committees have successively drawn attention to the ever tightening stranglehold of road traffic on the Capital City of the Commonwealth, and have advanced plans for relieving it, but *nothing* effective has been done. It has always been obvious that the realisation of an effective comprehensive plan (and it cannot be effective unless it is comprehensive) must cost much money, and involve temporary disturbances and scars. What does not seem to be realised by those in authority is that unless the situation is speedily and boldly faced up to, the stranglehold can before long become a death grip.

**READERSHIP OF " THE BUILDER "**

IN the issue of *The Builder* for April 28 was included a postcard for completion and return by our subscribers. Our thanks are due to the many who have sent this postcard to us; the information will be of great assistance. May we ask those subscribers who have not yet done so to fill in and return their postcard now.—THE EDITOR.

# THE PLANNING OF PRIMARY SCHOOLS

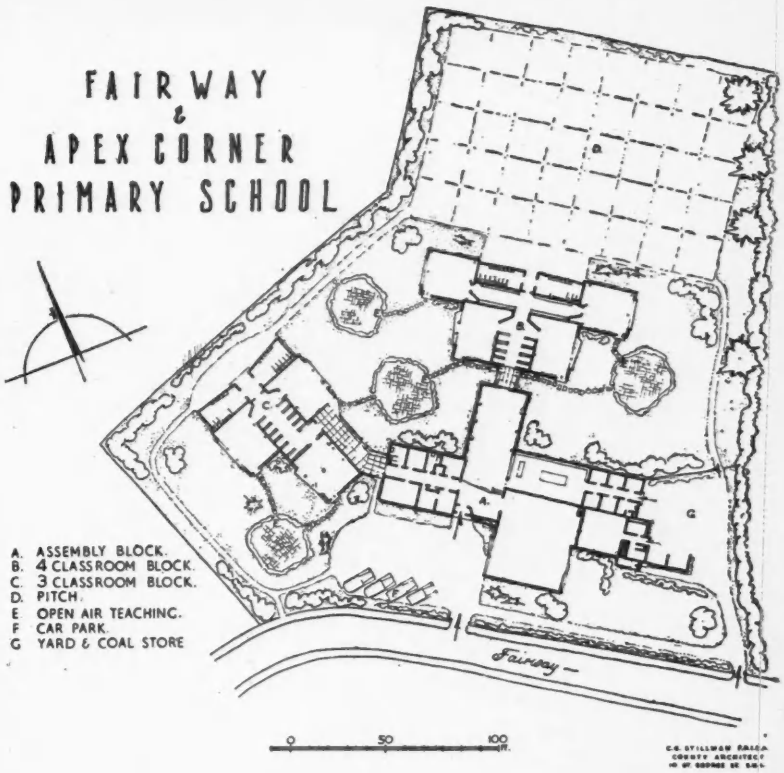
## Building Rate and Cost per Place

THE Ministry of Education has recently issued further guidance on planning primary schools for the 1951 programme. In order to achieve a cost per place of £140 the Ministry prescribes minimum total nett areas for teaching accommodation and storage and assembly hall and storage. Minimum areas for classrooms are not given, but it is suggested this should not be less than 520 square feet.

If 50 sq. ft. per place is adopted, this will necessitate a maximum building rate in the London area of 56s. per square foot, including playgrounds, if £140 per place is not to be exceeded.

With a view to securing economy in expenditure, consistent with these latest educational requirements and a reduction in time to prepare plans, the Middlesex County Architect, Mr. C. G. Stillman, F.R.I.B.A., has investigated and produced a logical solution to this problem. The new primary schools are proposed to be planned in a series of units, connected by short covered ways or by means of the dining-room as shown in the accompanying illustration. For a typical primary school of one-form entry for junior and infant pupils, the buildings would comprise: One unit containing four classrooms to accommodate 160 junior pupils; one unit containing three classrooms to accommodate 120 infant pupils; one unit comprising assembly hall, kitchen and dining-room; and staff rooms, medical inspection and boiler house.

For larger schools further classroom units would be added or, alternatively, a unit containing five classrooms substituted for a unit of three classrooms, separate assembly halls and dining-rooms being provided for the junior school and infants' school, and the size of the kitchen appropriately increased. The plan achieves considerable economy in total floor space, being at the rate of 50 square feet per place as compared with the present 55 square feet suggested in the Ministry of Education Circular 209.



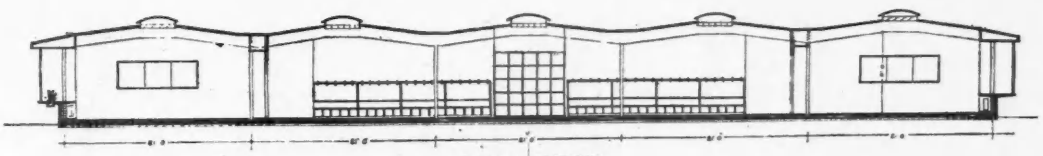

*Classroom Units.*—Teaching accommodation is planned in units of five, four and three classrooms, each complete with children's coat stands on the open principle, w.c.s and ablution rooms. Overhead daylighting with curved Perspex roof light and adjustable louvres to reduce glare has been adopted. This method of lighting ensures an even distribution of daylight, permits considerable reduction in the standard height of classrooms, and gives a general domestic character to the whole building. Side lighting is provided by means of bay windows.

*Administration Unit.*—Comprises entrance hall, school meals kitchen and dining-room, administration and boiler house. The dining-room is planned to provide access to the teaching units and may be utilised for additional educational activities if desired.

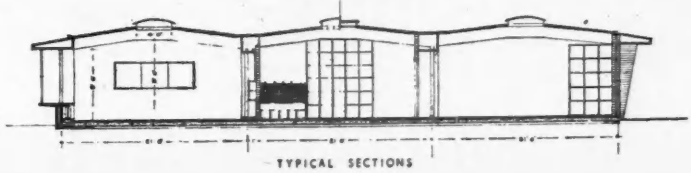
*Construction.*—To reduce foundations to a minimum, independent steel tubular columns have been designed to support continuous light steel-framed trusses spaced at 10-ft. centres over four, three and one bays of 21 ft. Concrete subfloors with shallow strip foundations are used for the main slab.

All structural work except the end wall of the assembly hall and boiler house will be constructed in light patent partitions, easily removable for adaptations or alterations to meet future changes in the educational planning requirements. In some cases, traditional brick construction will be used.

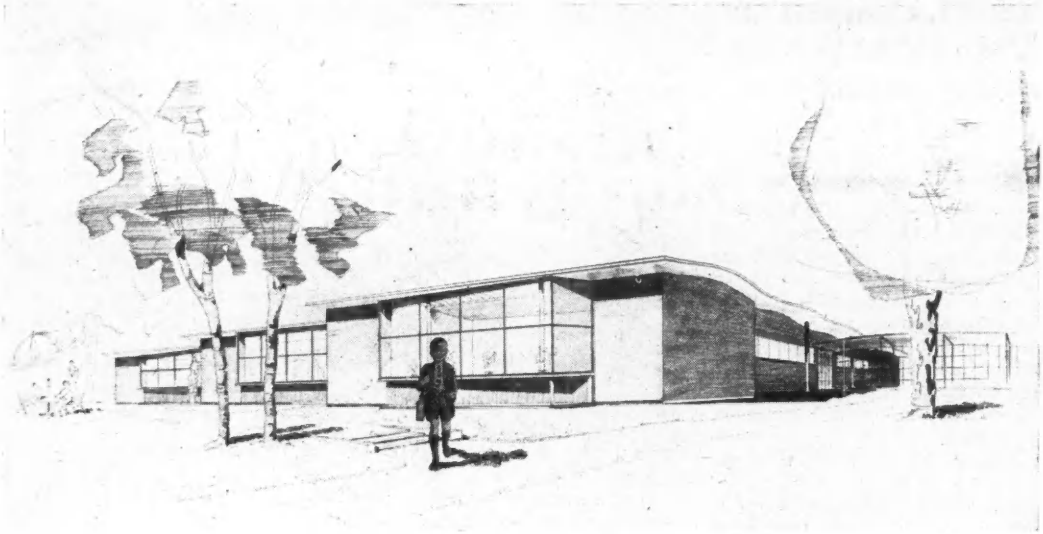
The County Architect, assisted by his Senior Architects, Mr. C. E. Hartland, A.R.I.B.A., and Mr. L. T. Channing, A.R.I.B.A., has prepared working drawings for 20 primary schools to be erected in 1950.



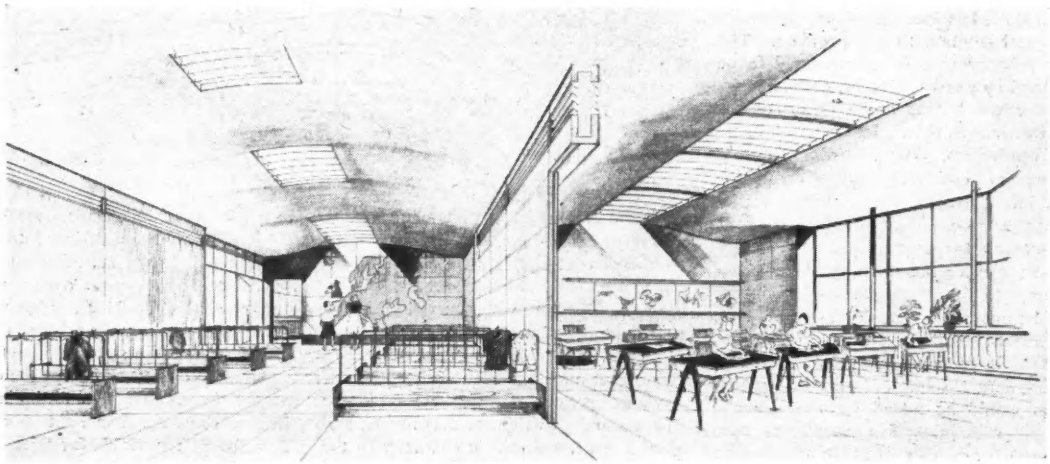
TYPICAL SECTIONS



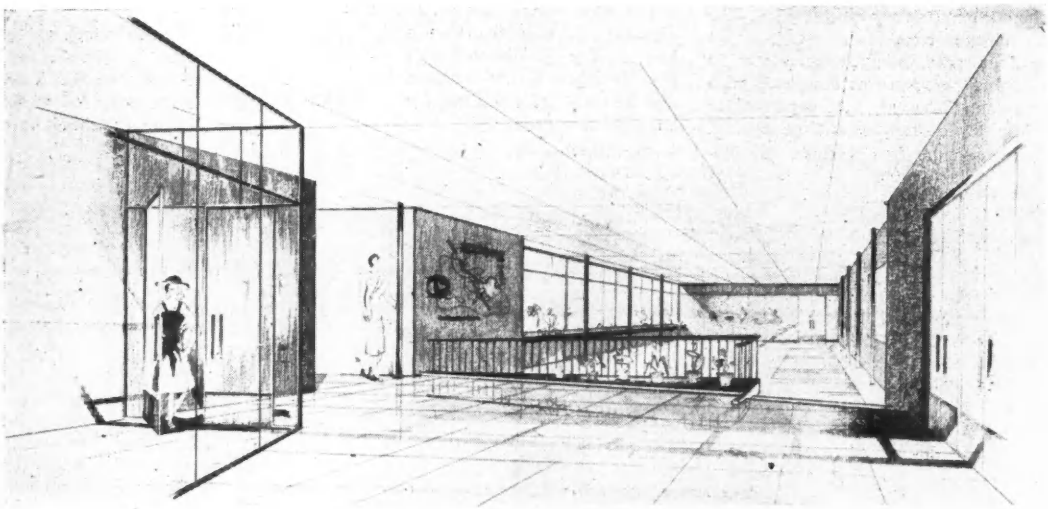
TYPICAL SECTIONS



Exterior view of classroom unit.



View of classroom and cloaks.



View of dining hall from entrance.

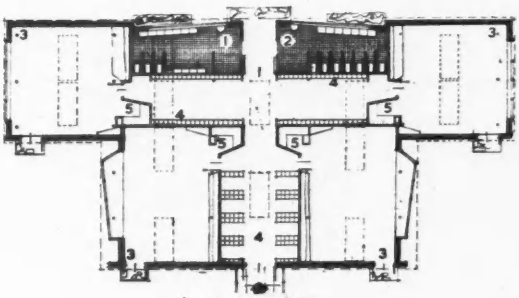
# TYPICAL ASSEMBLY BLOCK

1. ENTRANCE.
2. DINING ROOM.
3. ASSEMBLY HALL.
4. KITCHEN.
5. HEAD TEACHER.
6. ASST HEAD TEACHER.
7. STAFF ROOM.
8. FEMALE STAFF LAVY.
9. STORE.
10. MALE STAFF LAVY.
11. MEDICAL INSPECTION.
12. BOILER ROOM.
13. WORKSHOP.
14. SWITCHROOM.
15. ENTRANCE TO FLAT OVER.
16. FUEL.
17. YARD.
18. STAFF.
19. VEG: STORE.
20. LARDER.
21. LAVATORY.
22. DRY STORE.
23. OFFICE.
24. SCHOOLKEEPERS FLAT.

SCALE 10 0 40 ft

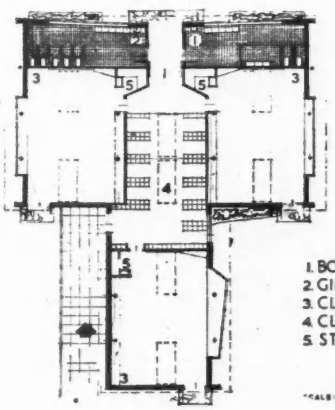
C.G. STILLMAN F.R.I.B.A. COUNTY ARCHITECT 10, ST GEORGE ST. S.W.1

# TYPICAL CLASSROOM BLOCKS



4 CLASSROOMS

3 CLASSROOMS



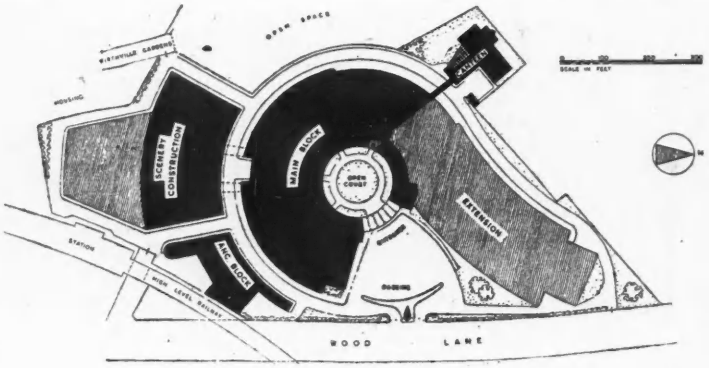
1. BOYS LAVATORY
2. GIRLS LAVATORY
3. CLASSROOM
4. CLOAKS
5. STORE

SCALE 10 0 50 ft

C.G. STILLMAN, F.R.I.B.A. COUNTY ARCHITECT 10, GREAT GEORGE ST. S.W.1

## THE PLANNING OF PRIMARY SCHOOLS.

C. G. STILLMAN, F.R.I.B.A., MIDDLESEX COUNTY ARCHITECT.




The layout, with proposed development for television shown black.

# DEVELOPMENT OF B.B.C. WHITE CITY SITE FOR TELEVISION

## Mr. Graham Dawbarn's Design

BEFORE the war the B.B.C. was seeking a suitable site on which to build permanent studios and ancillary accommodation in London because the studios at Alexandra Palace were neither adequate in size nor sufficient in number. On the cessation of hostilities the search was resumed. In 1947 the Corporation decided that the White City Exhibition site at Shepherd's Bush was, on the whole, the most favourable of the many sites which had been considered.

Negotiations for the acquisition of the site began in 1947 with the Exhibition Company, but after some progress had been made it was learnt that the L.C.C. had plans to acquire the whole of the site for housing. In August, 1947, the B.B.C. represented to L.C.C. officials that the Corporation was experiencing the utmost difficulty in finding a large enough site on which to build, *inter alia*, premises for the Television Service. The representations were most sympathetically considered by the L.C.C. and the Corporation was informed some months later that it had been agreed in principle that the B.B.C. should be permitted to acquire approximately 13 acres of the White City site.

By August, 1948, it had become clear that the B.B.C. might go ahead on the assumption that the site would be available. Long-term and short-term reviews of the Corporation's building and accommodation problems in the London area were accordingly carried out in order that a decision might be taken as to which of the B.B.C.'s activities could, with best advantage to the Sound and Television Services, be housed at the White City. It was later decided that highest priorities should be given to the development of approximately half the site for the Television Service in the first instance and that no commitments for the development of the remainder of the site should be made in the meantime.

Limitations imposed on capital investment under the national building programme later showed it to be impracticable to complete sufficient accommodation for television on the White City site in time to replace the Alexandra Palace when the lease of those premises expires in June, 1956, and to provide for expansion. In order to bridge the gap and to provide additional studios for television immediately the Corporation acquired film studios in Lime-grove approximately half a mile from the White City. These studios were suitable for quick conversion and occupation as temporary television studios until such time as the move to the permanent building at the White City could take place.

It was originally intended that a planning competition should be instituted in connection with the development of the site as a whole. It was later decided, however, that this would be unsuitable, having regard to the necessity for maintaining a considerable degree of flexibility as to the eventual use of the second half of the site. Instead, the B.B.C. invited the President of the Royal Institute of British Architects to submit names of architects considered suitable for a project of this kind. From the recommendations received, the Corporation chose Graham Dawbarn, C.B.E., M.A., F.R.I.B.A. (Messrs. Norman and Dawbarn), who, on November 18, 1949, was appointed, in association with M. T. Tudsbery, C.B.E., M.I.C.E., the B.B.C.'s Civil Engineer. Early in the present year (1950) an architectural conception had been evolved which was deemed by the B.B.C.'s professional advisers, Mr. Howard Robertson, M.C., A.R.A., F.R.I.B.A., and Prof. W. G. Holford, M.A, F.R.I.B.A., to provide a striking architectural solution of requirements, taking into account the problem of neighbourhood and site conditions generally. The proposals were thereupon considered by the Board of Governors of the B.B.C. and adopted as being distinctive and at the same time having character, originality and fulfilling their function. It was decided at the same time that the "user" of the second half of the site, so far as detailed planning was concerned, should remain open.

The design shown in the accompanying illustrations has its main entrance at the junction between the curvilinear "tail-piece" and the multi-storey "ring" encircling the central open court.

On the lower floors of the "ring" there would be accommodated artists' reception areas, dressing-rooms, etc., quickly accessible to: two studios, each 75 ft. by 120 ft. by 45 ft. high; two studios, each 75 ft. by 120 ft. by 45 ft. high for 80 ft. and 60 ft. high for the remaining 40 ft.; and three studios, each 70 ft. by 50 ft. by 35 ft. high.

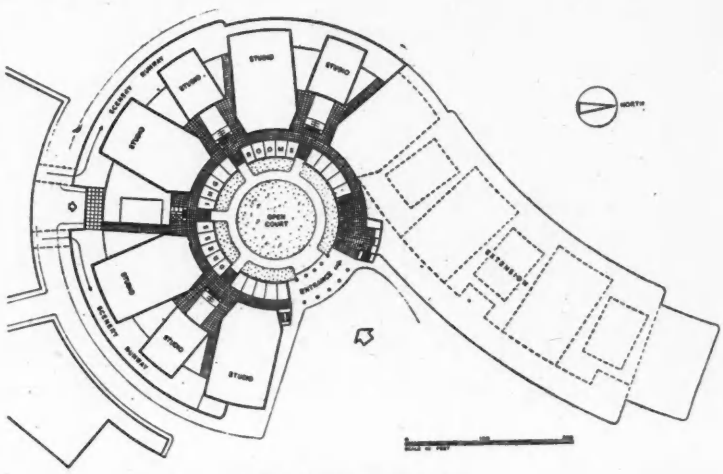
A Presentation Suite would be provided between Studios 1 and 2, where announcements, captions, telecine and other inserted items would be televised.

Control and apparatus rooms, etc., are planned to be accommodated on lower floors of the "ring"; these would have observation-windows overlooking the studios at elevation approximately plus 25 ft. Above these and other technical areas would be administrative and other offices of the Service.

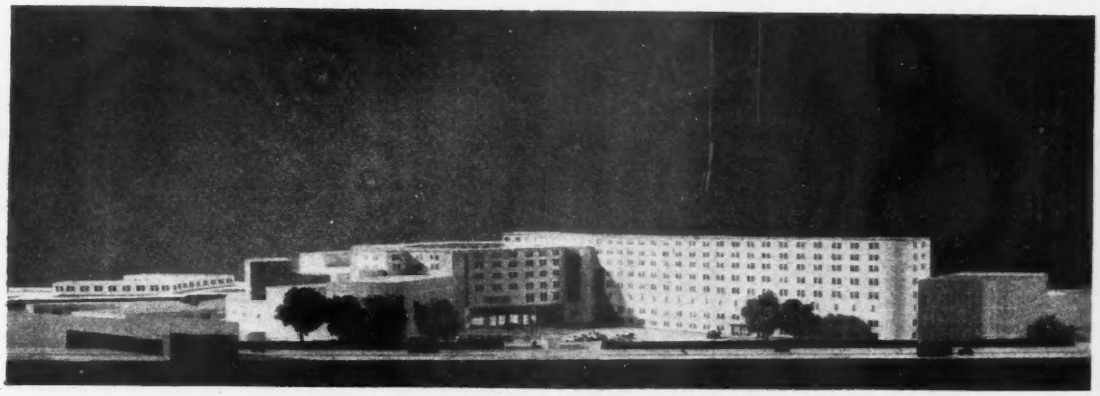
At the outer end of the studios it is planned to provide a closed continuous scenery-runway, of a size sufficient for the reception at each studio of assembled scenery units, some 25 ft. long by 15 ft. wide by 25 ft. high, which would be conveyed to the studios upon "floats" from the scenery block shown lying to the south of the main block.

The road shown encircling the main block with its later extension, is mainly intended to satisfy requirements for fire-fighting.

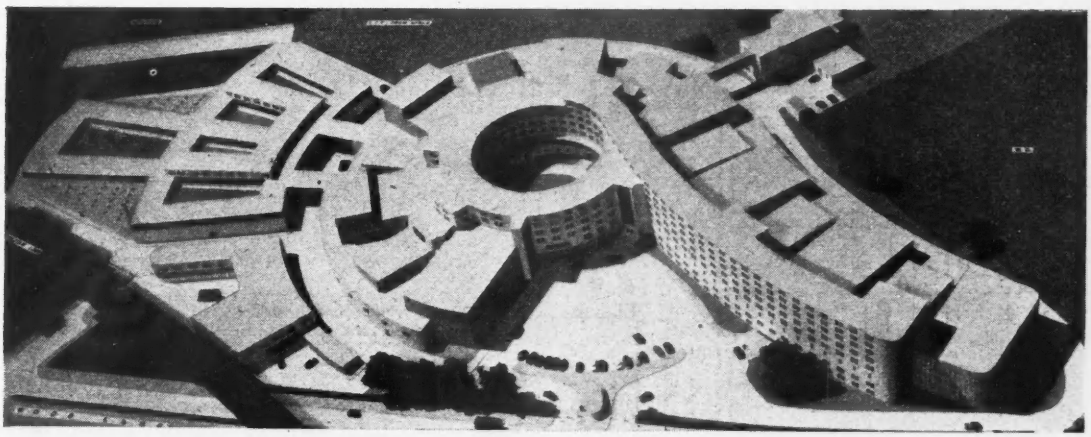
The B.B.C. hope to build and occupy the premises progressively; and, subject to the limitations of capital investment, plan to have the scenery block completed by the end of 1952 so that it may serve scenery to the Lime-grove studios until such time as the multi-storey block, and large studios Nos. 1 and 2, with the Presentation Suite, and the canteen—all of which would form an "operational unit"—are built and equipped.



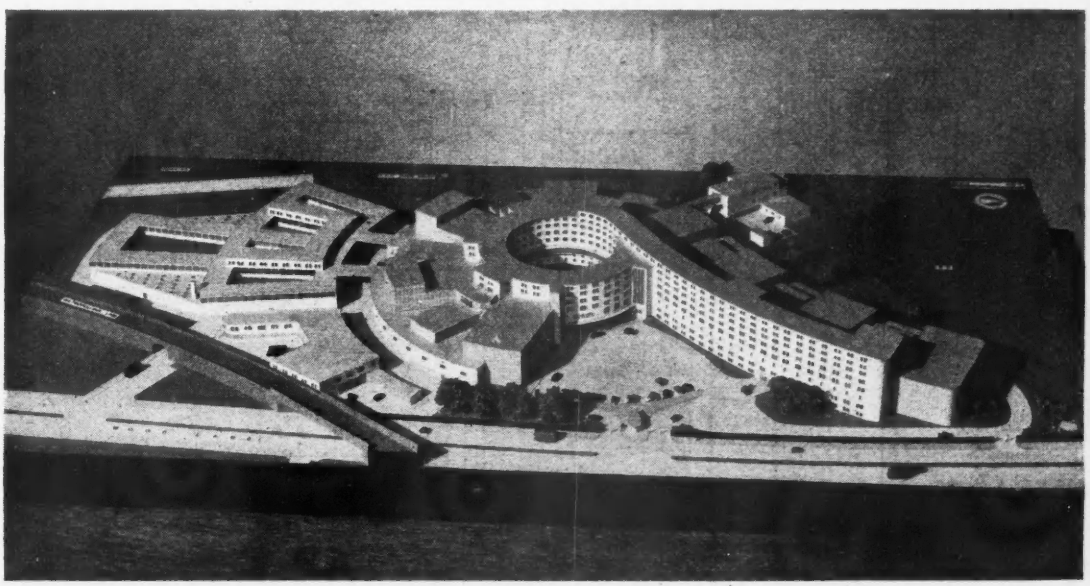

Ground-floor plan of main block.



View of model of the scheme from the south-east.

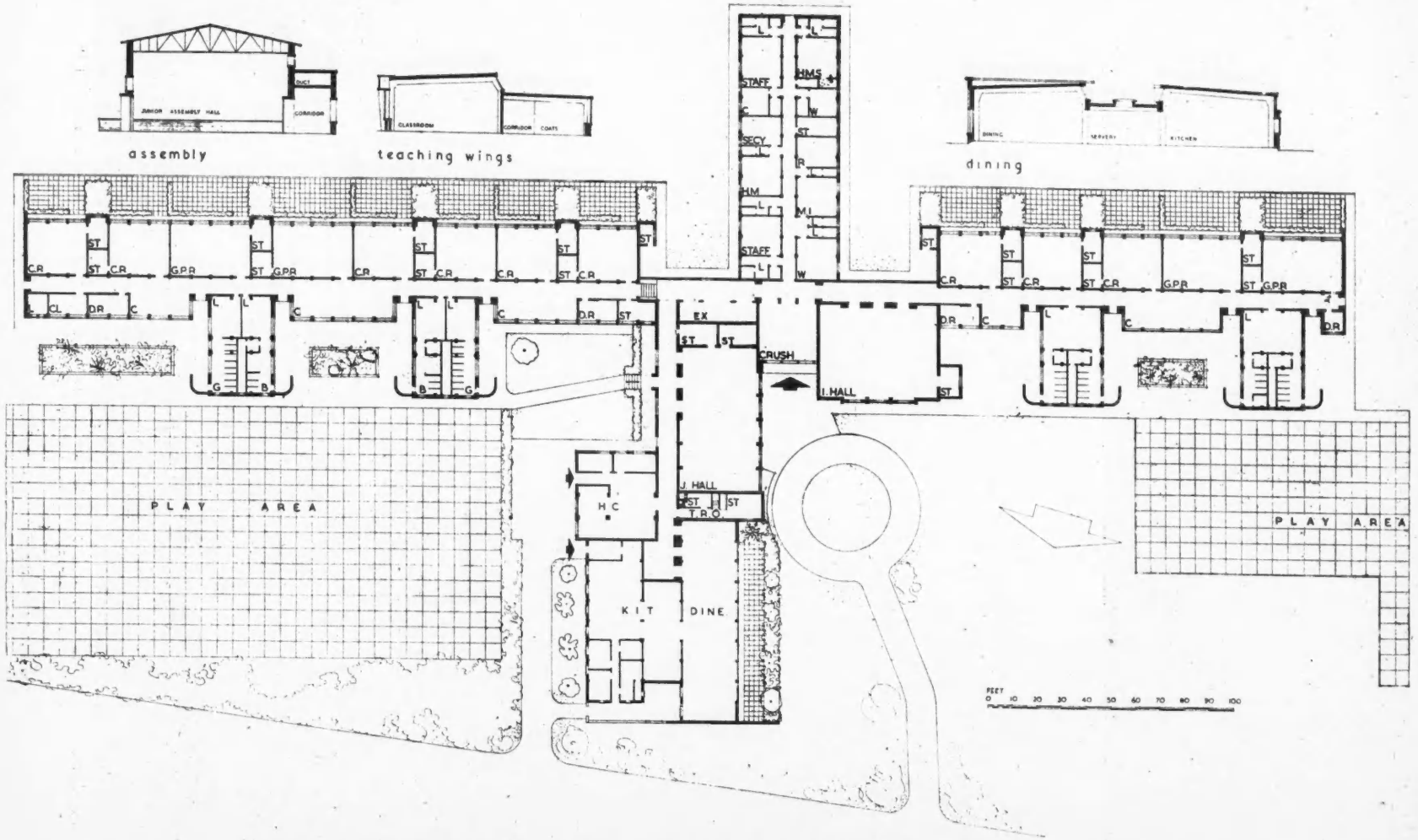


Bird's-eye view of model showing central open court.



Model of proposed scheme from the east. The portion of the scheme comprising the circular "ring" and buildings to the left of that "ring" will be erected first and devoted to television.

## DEVELOPMENT OF B.B.C. WHITE CITY SITE FOR TELEVISION




**TWO SCHOOLS FOR THE ESSEX COUNTY COUNCIL.** CRANHAM OGLETHORPE PRIMARY SCHOOL. Plan and Sections.

Ma

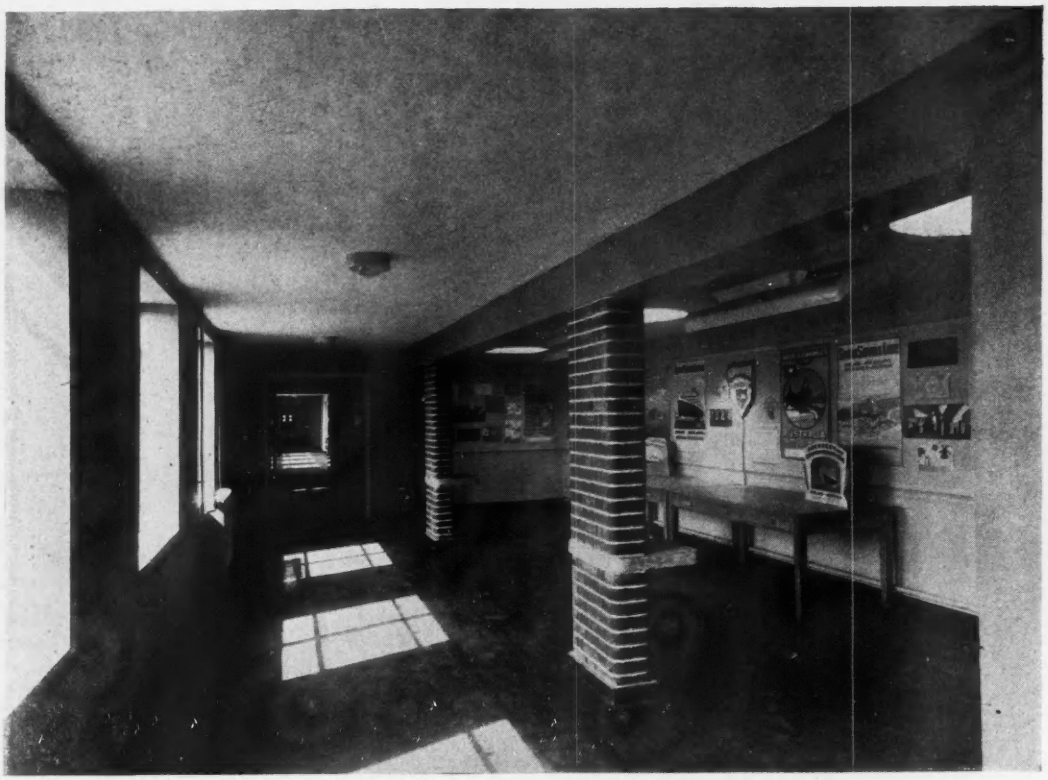
CRANHAM OGLETHORPE SCHOOL. Water tower and assembly hall from entrance drive.

# TWO SCHOOLS FOR THE ESSEX COUNTY COUNCIL

H. CONOLLY, F.R.I.B.A., COUNTY ARCHITECT. D. SENIOR, F.R.I.B.A., DEPUTY COUNTY ARCHITECT. E. T. ASHLEY SMITH, A.R.I.B.A., ASSISTANT ARCHITECT (EDUCATION)

A. W. COOPER, A.R.I.B.A., Assistant Architect in Charge of Dagenham Whalebone Primary School
W. C. B. SMITH, A.R.I.B.A., Assistant Architect in Charge of Cranham Oglethorpe Primary School

CRANHAM OGLETHORPE SCHOOL. Dining hall and water tower from the south.



**CRANHAM OGLETHORPE SCHOOL.** Corridor display space. *Below:* (*left*) Dining hall with serving hatches on right; (*right*) Corridor cloakroom with seats and shoe trays.

AMONG the more recently completed projects in the Essex County Council's School Programme are the Oglethorpe County Primary School, Cranham, and Whalebone-lane Primary School, Dagenham.

With the exception of the two assembly halls, the entrance halls and the water tower, the structural elements of the Cranham Oglethorpe School, which provides accommodation for 320 juniors and 200 infants, are of standard concrete units with a wall cladding of brick or fluted concrete slabs. The plan is built up of the planning units adopted for the first part of the County's School Programme, with ranges of classrooms with adjoining cloaks, ablutions for the teaching wings and with the assembly halls for each department grouped with the kitchen and dining-room. The classroom wings face south-east and look over the playing fields. The playing areas are sited with easy access from all parts of the teaching rooms.

The dining-room has windows overlooking an area which is to be laid out as gardens. The cladding of the standard structural frame is generally of brick with a panel of fluted concrete enlivened with faience medallions, brightly coloured. The two assembly halls, one for infants and one for juniors, adjoin the entrance vestibule. The tower built for water storage is of traditional brick construction.

Where the classroom elevation faces the playing fields the infilling between the structural frames is of brick and the light baffles and hood are of precast concrete. Fluted concrete panels over the light baffles form the main duct for all services. Open-air teaching terraces are provided for use by both infants and juniors.

Classrooms have been provided with a specially designed fitting incorporating a revolving blackboard, radio unit and projector screen, with teachers' cupboards and shelves. Coloured curtains cover open shelves as a substitute for doors, for which no timber was available. The projector screen is fitted with a hood which opens to exclude from the screen surface some of the daylight from the windows. When closed the outside of the fitting can be used as a pin-board.

For the dining hall, which is provided with kitchen hatches, standard classroom structural units have been used, the floor being of grease-proof tile. The ceiling is coloured light blue and the walls are a sunshine yellow with parts picked out in deep red.

## TWO SCHOOLS FOR THE ESSEX COUNTY COUNCIL

CRANHAM OGLETHORPE SCHOOL. Classroom elevation to playing fields. *Below:* A typical classroom.

In the corridors the walls are cold glazed cement and the ceilings asbestos cement spray. Wall colours are various neutral tints and doors are picked out in bright contrasting colours. A corridor display space with piers in blue brick with white pointing, and with concrete flower shelves, has been provided at the end of the assembly hall block.

The general contractors were Messrs. Thomas Bates and Son, Ltd., of Romford, and nominated sub-contractors and suppliers included : Heating and hot-water services, Walter Cowen, Ltd. ; electrical services, Evans and Shea, Ltd. ; metal windows, James Gibbons, Ltd. ; precast concrete roofs and floors, Concrete, Ltd. ; asbestos spray, Turners Asbestos Cement Co., Ltd. ; bitumetal roofing, William Briggs and Sons, Ltd. ; felt roofing, Mells Asphalte Co. ; flooring (Granitic) Summers and Co. ; (Korkoid) Korkoid Decorative Floors ; (Durablock), Terradura Flooring Co., Ltd. ; (Ritzide) Leatherflor, Ltd. ; (Accotile) R. W. Brooke and Co., Ltd. ; " Muroglaze," Modern Surfaces, Ltd. ; suspended ceiling, H. W. Cullum and Co., Ltd. ; rolling shutters, Shutter Contractors, Ltd. ; wall tiling, Carter & Co., Ltd. ; trusses, purlins and gutters, John Thompson Beacon Windows, Ltd. ; railings and gates, H. and C. Davis and Co., Ltd. ; tarpaving, Constable Hart and Co., Ltd. ; kitchen ventilator canopies, Helliwell and Co., Ltd. ; bricks (internal) Uxbridge Flint Brick Co. ; (external) Alphamstone Brick and

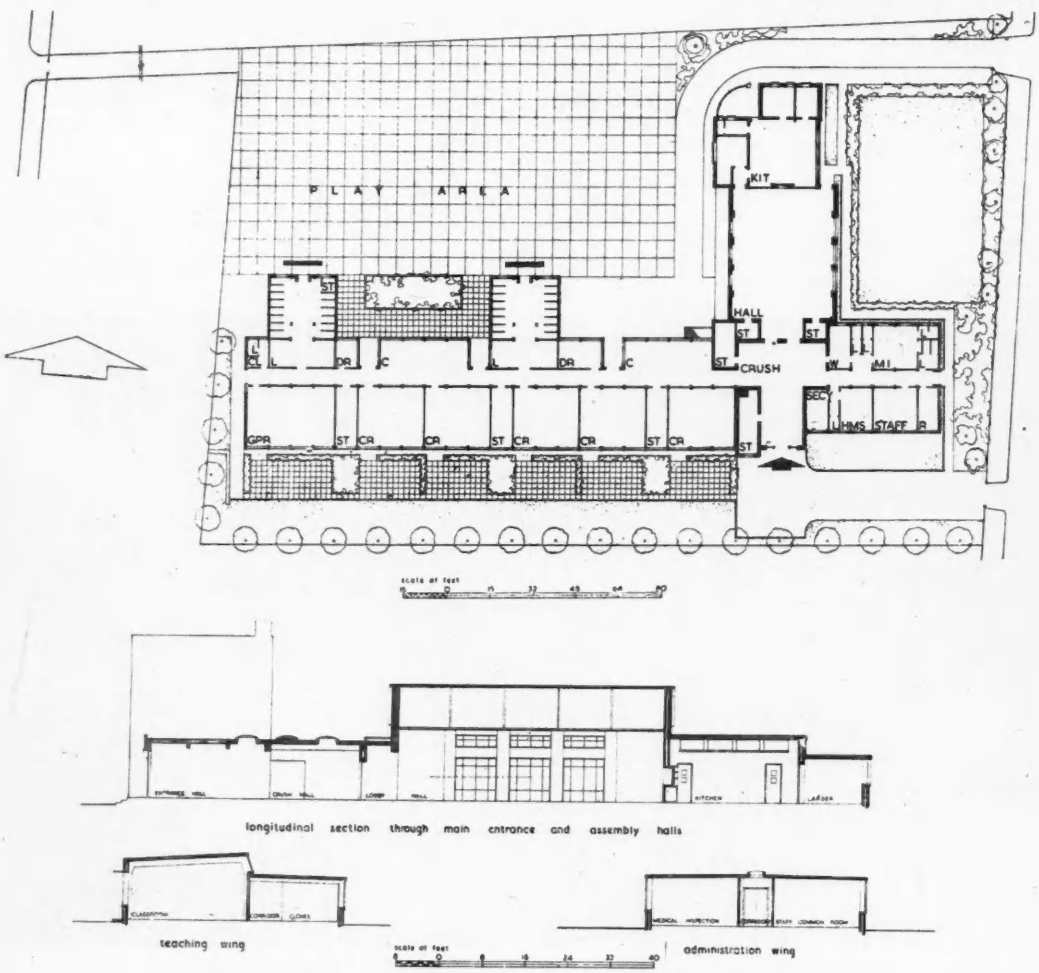
## TWO SCHOOLS FOR THE ESSEX COUNTY COUNCIL

Tile Co., Ltd. ; precast concrete cills, etc., Girlings Ferro Concrete Co., Ltd. ; precast concrete components, W. C. Richardson; reinforced concrete frames, The Helical Bar and Engineering Co., Ltd. ; sanitary fittings, Adamsez, Ltd. ; cloakroom fittings, Cloakroom Equipment, Ltd. ; internal doors, the general contractors ; ablution fountains, William E. Farrer, Ltd. ; w.c. compartments, The Crittall Manufacturing Co., Ltd. ; rooflights, J. A. King, Ltd. ; ironmongery, Nettlefcld and Sons, Ltd. ; revolving blackboards, Wilson and Garden, Ltd. ; plastic lettering, The Lettering Centre ; safety glass, Splintex Safety Glass, Ltd. ; duct covers, Burn Bros. (London), Ltd. ; paving slabs, Metropolitan Concrete Works, Ltd. ; trees and shrubs, Roseland Nurseries, Ltd., Essex Institute of Agriculture ; and paint, Wm. Harland and Son, Ltd.

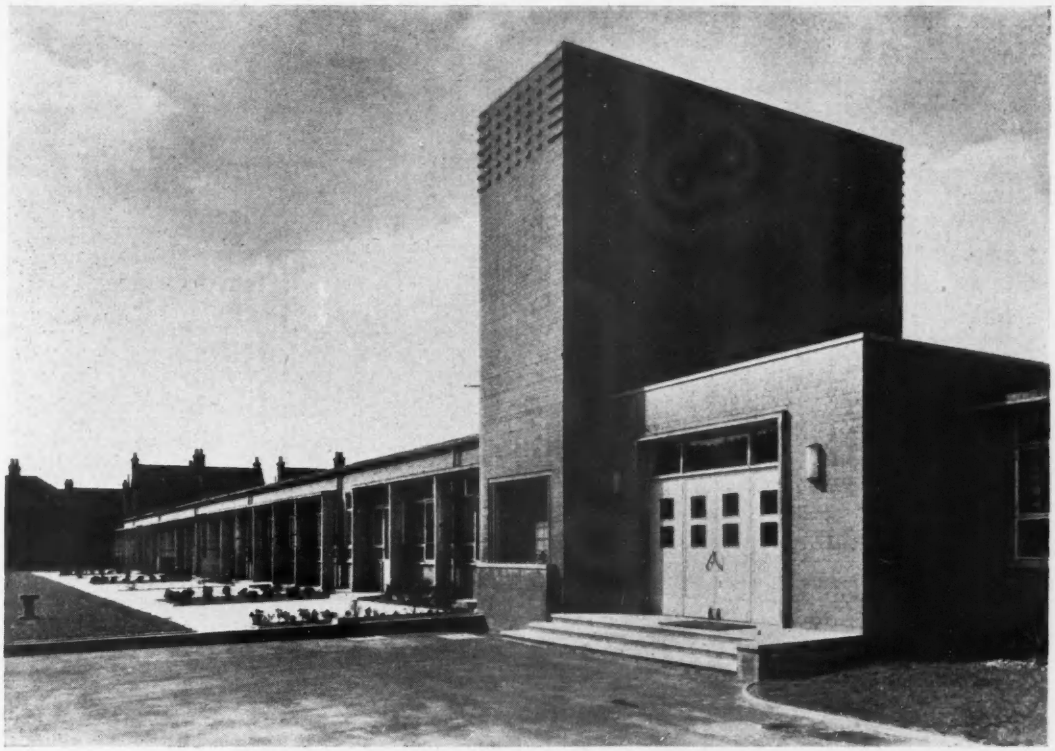
Dagenham Whalebone-lane Infants' School, for 240 infants, has a simple plan to fit the very restricted site on which stood a pre-war quadrangular plan school, destroyed by enemy action. The site is enclosed on two sides by small houses and on the boundaries a concrete trellis of simple design has been fixed with a strip of garden alongside. The trellis, with climbing plants, forms a pleasing screen between school and houses. The plan and section show the classrooms built up from concrete unit frames and the administration block and kitchen are of similar units.

The cladding to the classrooms is of coloured cement bricks and the light-control baffles and hoods are of precast concrete. The open-air teaching terraces have proved of great value on this very limited site.

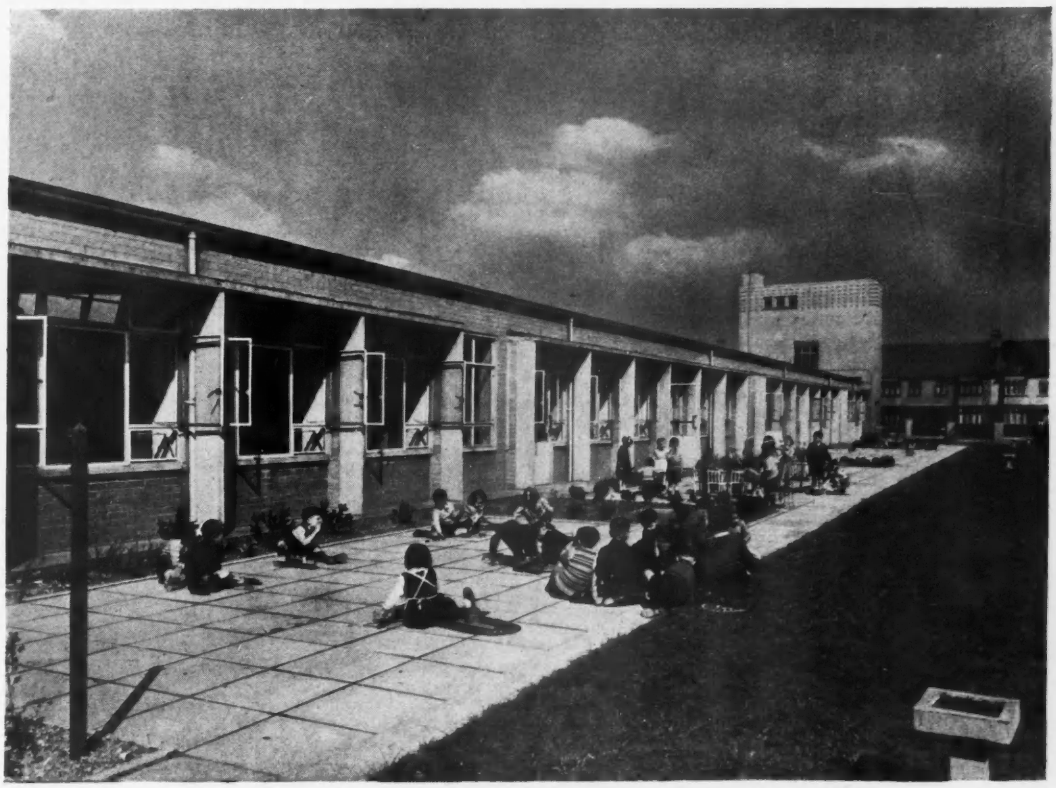
The general contractors were Messrs. Charles S. Foster and Sons, of Loughton, and the nominated sub-contractors and suppliers included : Heating and hot-water services, Walter Cowen, Ltd. ; electrical services, Read and Partners, Ltd. ; asphalt tanking, The General Asphalte Co., Ltd. ; metal windows and doors, Crittall Manufacturing Co., Ltd. ; precast concrete roofs and floors, Windsor Construction, Ltd. ; asbestos spray, Turners Asbestos Cement Co., Ltd. ; bituminous roofing, The Ruberoid Co. ; steel roof decking, The Ruberoid Co. ; flooring (Granitic tiles), Summers and Co. ; (Ritzide) Leatherflor, Ltd. ; (Korkoid) Korkoid Decorative Floors ; (Prododur) Prodorite, Ltd. ; (Accotile) R. W. Brooke and Co., Ltd. ; paving slabs and kerbs, Wettern Bros., Ltd. ; glazement work, Robbs Cement Enamel Finishes, Ltd. ; " Muroglaze," Modern Surfaces, Ltd. ; suspended ceiling, Horace W. Cullum and Co., Ltd. ; rolling shutters, Shutter Contractors, Ltd. ; wall tiling, Summers and Co. ; trusses, purlins and gutters, John Thompson Beacon Windows, Ltd. ; unit fencing, Metropolitan Concrete Works, Ltd. ; tarpaving playgrounds and roads, Constable Hart and Co., Ltd. ; bricks (internal) Uxbridge Flint Brick Co. ; (external) Alphamstone Brick and Tile Co., Ltd. ; precast concrete cills, heads, etc., Girlings Ferro Concrete Co., Ltd. ; reinforced concrete frames, The Helical Bar and Engineering Co., Ltd. ; sanitary fittings, B. Finch and Co., Ltd. ; cloakroom fittings, Clark Hunt and Co., Ltd. ; classroom fittings and joinery, the general contractors ; internal doors, John Sadd and Sons, Ltd. ; ablution fountains, William E. Farrar, Ltd. ; w.c. compartments, Venesta, Ltd. ; roof lights, Luxfer, Ltd. ; dome lights, T. and W. Ide ; ironmongery, Clark Hunt and Co., Ltd. ; revolving blackboards, Wilson and Garden, Ltd. ; plastic lettering, The Lettering Centre ; gates and railings, Crittall Manufacturing Co., Ltd. ; safety glass, Splintex Safety Glass, Ltd. ; sliding door gear, P. C. Henderson, Ltd. ; trees, shrubs and grass seed, R. C. Notcutt, Ltd. ; paint (internal and external), Screetons ; and anti-condensation in kitchen, Williams and Howard.




DAGENHAM WHALEBONE SCHOOL. Plan and sections.

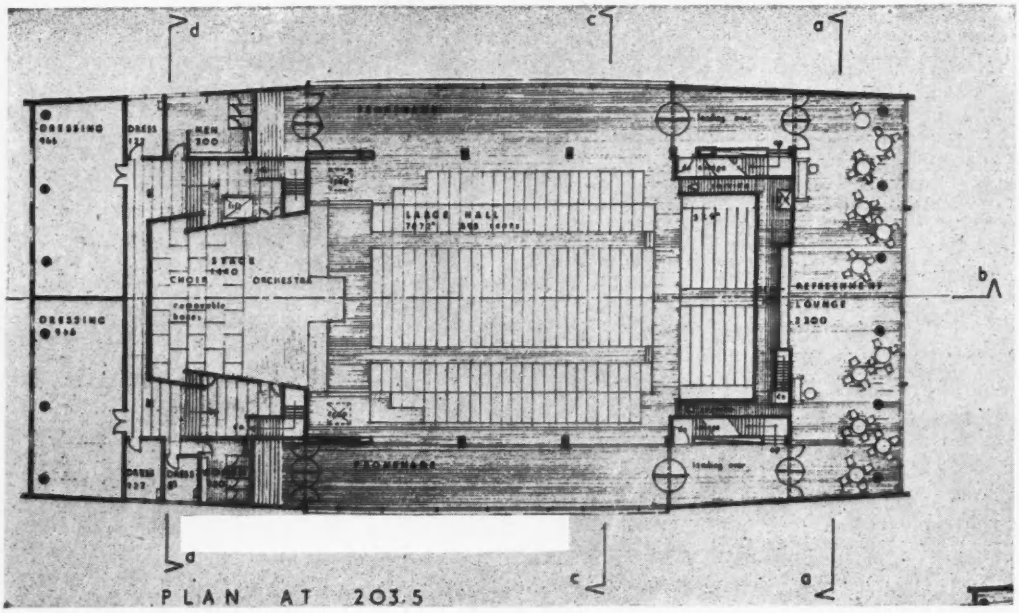


DAGENHAM WHALEBONE SCHOOL. Main entrance.



DAGENHAM WHALEBONE SCHOOL. Classroom block and open-air teaching terrace.

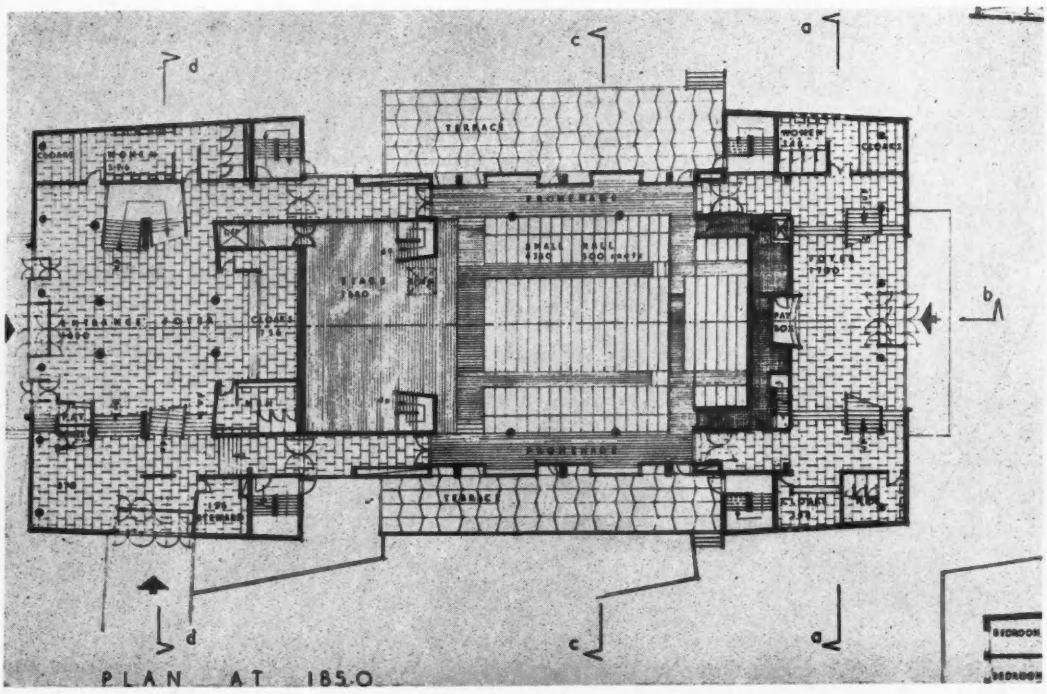
## TWO SCHOOLS FOR THE ESSEX COUNTY COUNCIL



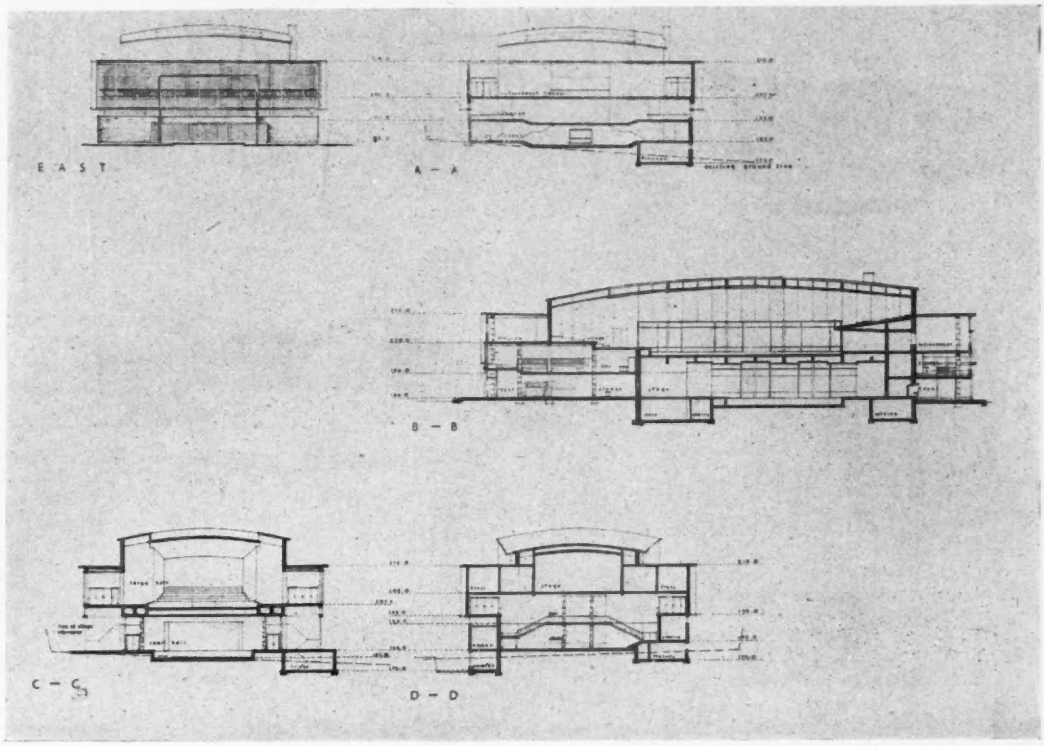

Plan of large hall.

# COMPETITION FOR A NEW CIVIC HALL, GUILDFORD

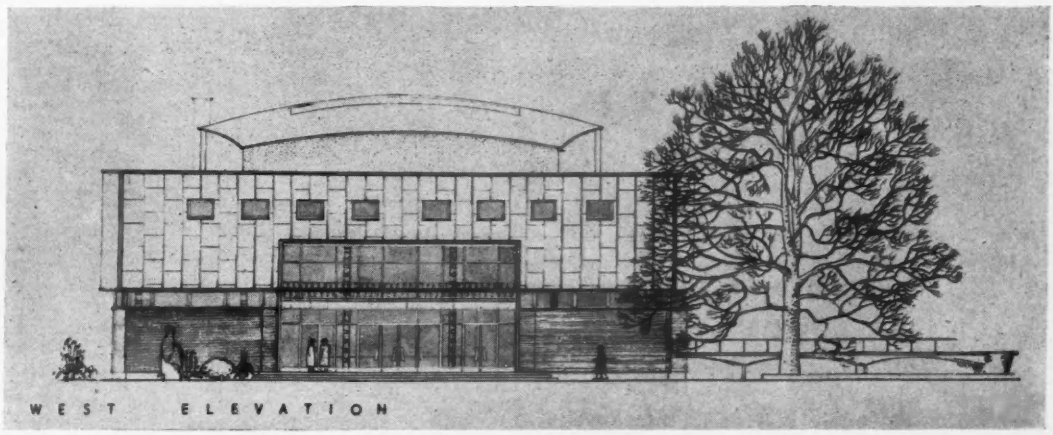
## WINNING DESIGN: LEONARD F. RICHARDS, A.R.I.B.A., A.M.T.P.I., AND CHARLES W. H. WRIGHT, STUD.R.I.B.A., ARCHITECTS




Plan of small hall.



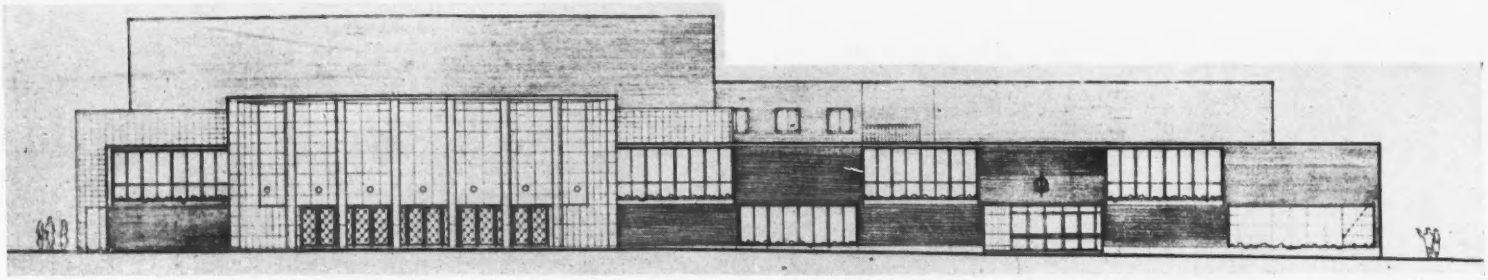

The east elevation and sections.



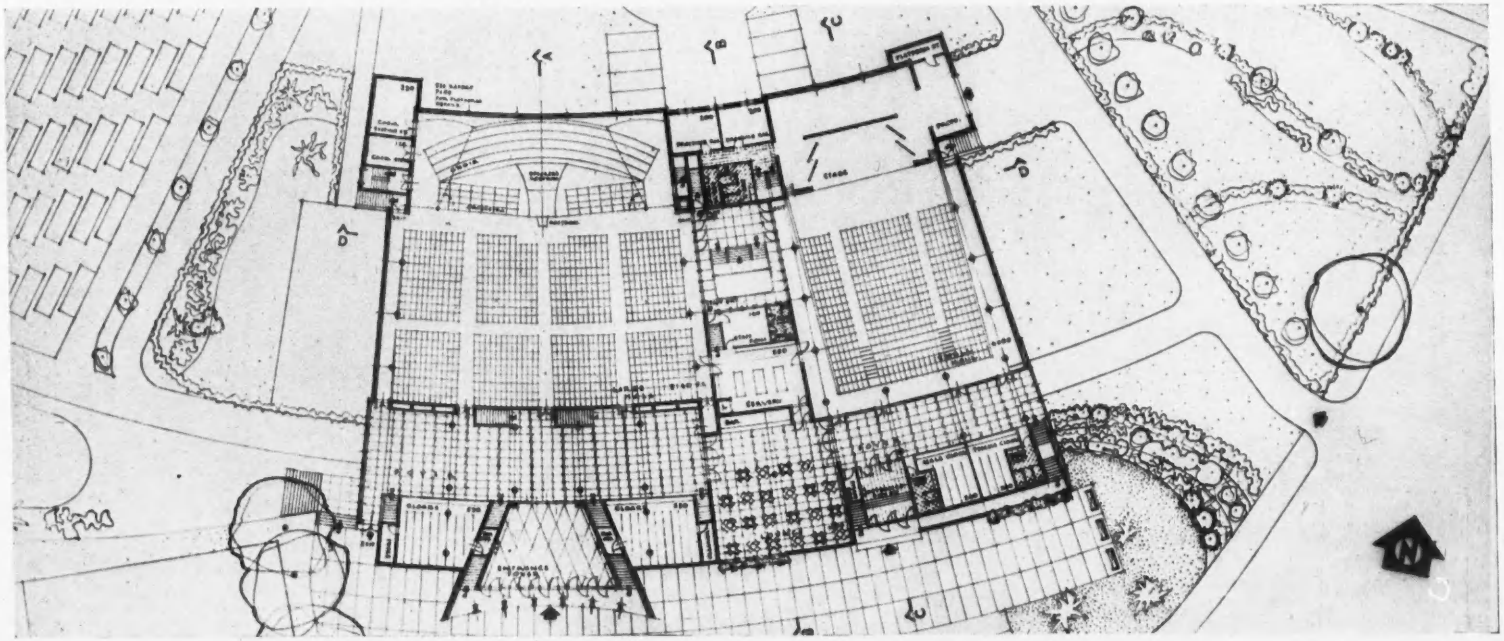

The west elevation.

## COMPETITION FOR A NEW CIVIC HALL, GUILDFORD

WINNING DESIGN: LEONARD F. RICHARDS, A.R.I.B.A., A.M.T.P.I., AND CHARLES W. H. WRIGHT, STUD.R.I.B.A., ARCHITECTS



The front elevation.



Ground-floor plan.

## COMPETITION FOR A NEW CIVIC HALL, GUILDFORD

**DESIGN PLACED SECOND: By W. S. BRYANT, A.R.I.B.A., and G. A. H. PEARCE, A.R.I.B.A., A.I.A.A.**

DESIGN PLACED SECOND: By W. S. BRYANT, A.R.I.B.A., and G. A. H. PEARCE, A.R.I.B.A., A.I.A.A.

# COMPETITION
## for a
## NEW CIVIC HALL, GUILDFORD
## The Assessor's Award

MR. G. A. JELLICOE, F.R.I.B.A., the assessor in the competition sponsored by the Guildford Borough Council for a new civic hall on the Firs Estate, London-road, Guildford, has announced his award as follows:—

FIRST (£1,000) (Design 35): Leonard F. Richards, A.R.I.B.A., A.M.T.P.I., and Charles W. H. Wright, Stud.R.I.B.A., 18, Walton-gardens, Folkestone, Kent.

SECOND (£500) (Design 62): W. S. Bryant, A.R.I.B.A., and G. A. H. Pearce, A.R.I.B.A., A.I.A.A., "Barony," Prospect-avenue, Farnborough, Hants.

THIRD (£250) (Design 88): Eric G. Broughton, A.R.I.B.A., A.M.T.P.I., A.R.C.A., 52, Homefield-road, Chiswick, London, W.4.

A total of 102 designs was received.

Following are extracts from the assessor's report:—

The Council is to be congratulated upon both quantity and quality of the competitive designs. The problem was not easy and resolved itself into one of good architecture related to costs. Many competitors failed to appreciate the limitations of cost, and some fine schemes could not be seriously considered for this reason alone.

The site lends itself to variations of grouping. Most competitors separated their two halls as distinct units and disposed these, sometimes extremely graciously, in an informal grouping. Competitors found difficulty in expressing the quality of a civic hall rather than two halls of a functional character, and in some of the most interesting designs there was too much glass area to be practical. More than one competitor endeavoured, for instance, to resolve the architectural problem of two parallel halls by endeavouring to unite them into a single composition by a titanic glass foyer extending across both fronts.

In the assessor's view, the winning design is outstanding. The design placed first [Leonard F. Richards, A.R.I.B.A., A.M.T.P.I., and Charles W. H. Wright, Stud.R.I.B.A.] is a high work of art insomuch that all parts, from the halls themselves to the smallest service unit, are subordinate to one idea; and that idea, like all good ideas, is extremely simple and beautiful. The authors have followed this through with skill and sensitivity, and although the building belongs to the present day, and expresses this fact, the assessor feels that it will fall harmoniously into the community of buildings of all dates that is characteristic of Guildford. It will indeed be a building of which the town may be justly proud. No actual description of the drawings is required here but particular attention should be paid to the flexibility of the use of the building, the spaciousness of the foyers and promenades, the complete separation of traffic to the two halls, and the extreme economy of use of land.

The design as presented is not without faults, but (except for minor errors of planning which may easily be rectified) these faults manifest themselves in the sections rather than in the plans or elevations, and may be traced to the desire for a low cube and so ultimately to the question of cost.

COST.—The authors appear to be more than 10 per cent. in error on their cube figure and in view of the complex reinforced structure they have employed, the assessor cannot agree that the building as shown and specified could be built at the required price. Furthermore, the additional heights required when this building is erected will call for additional expenditure, though not excessively so. In their report, the authors say that they have not included such decoration as sculpture and murals which could be added as economy allowed. The assessor, having studied the form of the building with great care, is of the opinion that the principle of incompletion of finishings could justifiably be extended to most parts except the exterior and the two halls themselves. With this in mind, and with the acceptance of a low specification for the minor parts, he is of the opinion that this building could be erected for a sum within 10 per cent. of that laid down in the conditions of competition. He would emphasise here that this compact building is probably the most economical of all designs received in maintenance charges, such as heating, etc.

Under Clause 6 of the Conditions of Competition the assessor advises that the authors be requested to modify and reconsider their design in the following respects: (1) To add to the heights of the halls and take such precautions and make such variations to shape as are necessary in regard to acoustics; (2) to re-study the orientation of the building in order to determine, in collaboration with the Council, whether they have made best use of the site in relation to potential but undecided town planning developments.

Compared with the winning design the drawings awarded second premium [W. S. Bryant, A.R.I.B.A., and G. A. H. Pearce, A.R.I.B.A., A.I.A.A.] show a somewhat clumsy grouping on the site. Otherwise it is an excellent design, the elevations having an air of dignity and monumentality suited to a civic hall. The halls are placed parallel, and are structurally sufficiently separated for acoustics. The levels are well used and there is an ingenious car approach.

The design placed third [Eric G. Broughton, A.R.I.B.A., A.M.T.P.I., A.R.C.A.] has not the architectural distinction of the previous two, and some of the planning of the less important parts is ill-considered and at times scarcely adequate. It is more a festival hall than a town hall ("dignified, cheerful, sportive edifice," to use the competitor's own description). Nevertheless, this design, with modifications, provides the requirements in a way that could be built within the cost.

In conclusion, the assessor wishes to thank all competitors for providing so many and so varied ideas. He also wishes to thank Mr. Hope Bagenal and Mr. A. C. Matthews, of Messrs. H. J. Venning and Partners, quantity surveyors, for their advice, respectively, on acoustics and on costing.

### The Winners' Report

Following are extracts from the winners' report:

A single building unit is proposed to contain all the required accommodation with the Large Hall supported independently above the Small Hall.

The maximum site area of this building unit is 19,400 superficial feet, which area is less than 10 per cent. as site coverage for the designated area.

The existing drive-in to the Firs is used, taking advantage of the nine-foot fall, for cars approaching the North Car Park and the Main Large Hall entrance. A similar direct approach is made for the south, Small Hall entrance. A spacious stepped terraced garden with a reflecting pool is proposed for pedestrians, with a footbridge approach to each Hall. This entrance feature via the concrete footbridge to the south-west pedestrian entrance is not included in the estimated cost, and it could be dispensed with. Ample car parking facilities are planned for patrons.

Separate entrances to the stages are provided, one being under the south pedestrian footbridge, and access for service vans to kitchen and heating chambers is provided.

Every effort has been made to insulate the stages and halls, as the inner core of the structure, from the noises of external traffic and from internal circulations. Special care has been taken to allow efficient catering for civic banquets, in either or both Halls, without interfering with the lounge and restaurant catering.

Each Hall is approached from its own dignified reception area of foyer accommodation. Level hardwood floor areas—with movable seating—are provided for the varied uses of stage, dancing, boxing and banqueting functions. Raised promenades, with side and rear adjustable seats surround this central area which can be partly, or completely, partitioned—or curtained—for certain functions.

The Large Hall has an area of 8,000 superficial feet with maximum seating capacity for 1,208. The four-stage level is planned between the flanking ducts and the suspended ceiling, making a proscenium setting. Natural lighting from the promenades is supplemented by the continuous clear storey glazing for the upper parts of the Hall. Concealed artificial lighting is provided from the edges of the suspended ceiling to supplement that from distributed pendant fittings. Air conditioning is provided from the ducts via the lower roof ducting.

The Small Hall has a superficial area of 4,380 feet and has a maximum seating capacity of 498. Approach is made from the east entrance. For theatrical productions, a hinged proscenium flap is provided to form a normal setting, with special stage lighting effects arranged to conceal cross beam. Natural lighting is from the glazed side screens and exit doors on to the north and south terraces.

*Estimated Cost of Building, Equipment, Services, etc.* The suggested total of £150,000 for building to include the extensive floor areas, accommodation with fitments and equipment required has certainly limited the authors' scope in planning and designing for those materials and finishes which would give the appropriate character for such an important civic building. However, the design presented, after amendments of estimated cost based on an average of 3s. 9d. per ft. of cube prices over the whole structure, does allow of good building, finishes and furnishings. The provision of the internal sculpture, painted panels and murals for the reception foyers is not included in the estimated cost of £155,000, but it does include the cost of the paved approaches, service drives and the necessary site works to gain access to the building. The estimated costs of certain seating and amended catering equipment are not available as provisional amounts, but they should be covered by the sum estimated on the cube basis. An estimated cost of £155,000 is based on an averaged 3s. 9d. per foot cube over building.

# NOTES AND NEWS

## M.O.H. Housing Medal

MEDALS to be awarded each year by the Minister of Health for the best designed local authority housing schemes in each of the 11 housing regions of England and Wales are now being struck in bronze at the Royal Mint. In ten regions awards will be made for the best urban and rural schemes, and in London for the best schemes of new development and of reconstruction.

The sculptor responsible for the design and modelling of the new Housing Medal is Mr. T. H. Paget, O.B.E. The medal is two and a quarter inches in diameter. The obverse carries the Royal Arms with inscription in bold relief. The reverse depicts a terrace of small houses based on the design of those formerly existing in *Munster-square; a decorative panel with laurel wreath over plans and models. The medals awarded in Wales through the office of the Welsh Board will bear an engraved inscription in Welsh, " Gwell gwr o'i barchu."

The Regional Awards Committees for 1950 have now been set up by the Ministry in collaboration with the R.I.B.A. and the entries for the first awards covering the post-war period ending December, 1949, are now being considered.

The medal is intended to recognise the merit of the design of the estate and each award will be made individually to the architect or designer, who will also receive a diploma signed by the Minister and the chairman of the awards committee. A separate diploma recording the selection of the Council's scheme will be presented to the local authority.

M.O.H. HOUSING MEDAL. The obverse (*left*) and reverse (*right*) sides of the Ministry of Health Housing Medal, designed by T. H. Paget, O.B.E. (*See Note.*)

### Kenwood Open Again.

LAST WEDNESDAY, May 17, the Lord Chancellor reopened Kenwood, Hampstead, which, with its collection of pictures and furniture, was left to the nation by the first Earl of Iveagh in 1927. The London County Council, already holding the park in trust, have now taken over the house as well, the trust funds which Lord Iveagh left for this purpose having proved inadequate. The house, which dates from 1616, was extensively improved and added to by Robert Adam in 1767, and is a magnificent example of his work, with contemporary decorations and furnishings. The mansion will be used primarily for the display of the Iveagh Bequest pictures and of any additional works of art, and, together with its contents, will be preserved as a fine example of the home of a cultured gentleman of the eighteenth century. The Bequest is widely known for its collection of pictures in which Gainsborough, Reynolds and Romney are strongly represented, with Dutch masterpieces by such artists as Rembrandt, Vermeer, Hals, Van Dyck and Cuyp.

This historic house and its contents will be open to the public from 10 a.m. on weekdays and from 2.30 p.m. on Sundays throughout the year, except on Christmas Day and Good Friday. It will be closed daily at 6 p.m. or a quarter of an hour before the closing time for the grounds, whichever is the earlier. Admission will be free, except on Wednesdays and Fridays, when a charge of 1s. will be made. Arrangements are being made for a refreshment service.

*Munster-square, known earlier as York-square, in the area adjoining Regent's Park, planned by John Nash. The terrace housing around the square was seriously damaged in the London air raids and is now demolished.

### Royal Pavilion, Brighton.

TO SOME people there is probably no more fascinating building in Europe than the Royal Pavilion at Brighton. This celebrated architectural fantasy was the summer palace where a gay and brilliant circle of friends gathered round George, Prince of Wales, and Mrs. Fitzherbert, to whom he had been secretly married. Later, when the Prince became Regent and eventually King George IV, the Pavilion was the centre of the English court for long periods during some of the most glorious years of our history, the years of Nelson and Wellington. After the death of George IV, the Royal Pavilion was lived in by King William IV and later, for short periods, by Queen Victoria with Prince Albert and their children. After the building had been deserted for several years, the townspeople of Brighton on June 16, 1850, saved the Royal Pavilion from intended demolition by purchasing the estate from the Crown for £50,000.

To mark the centenary, the Royal Pavilion will be open to the public each day throughout the summer months. The furnished State Apartments will be opened, and the Centenary Festival inaugurated, on Friday, June 9, by the Duke of Devonshire. A Grand Ball will be held in the Royal Pavilion on the night of the Centenary itself, Friday, June 16, and there will be lectures by Mr. D. L. Murray, Mr. James Laver, Sir Shane Leslie, and other well-known speakers during the Festival on different aspects of the Royal Pavilion and its period.

### Opening of Ham House.

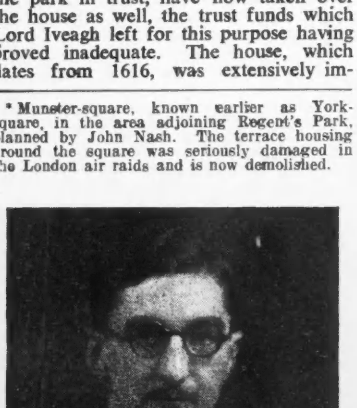
HAM HOUSE, near Richmond, was opened to the public on May 17. The original Ham House was built in 1610 as a modest country residence by Sir Thomas Vavasour. In the middle of the century it was bequeathed by her father to Elizabeth, Countess of Dysart, who, after her marriage to the Duke of Lauderdale, Charles II's minister, enlarged the house and redecorated it (1673-75) in the flamboyant baroque style of the period.

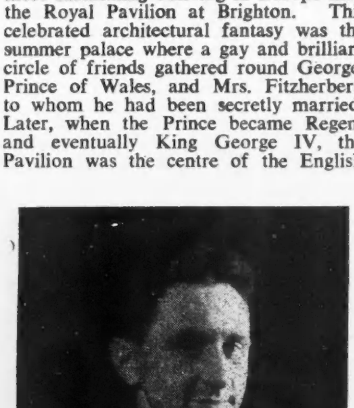
Time has effaced some of the splendour that made Ham a synonym for prodigality in its day, but through the preservation of much of the original furniture and interior ornament the house has retained its character and still reminds us vividly of the manner of living among the great, which after the return of Charles II " soon passed to luxury and intolerable expense."

Ham House is the property of the National Trust, which has leased it to the Ministry of Works. The Ministry is responsible for the fabric and grounds. The contents were bought for the nation and are part of the collections of the Victoria and Albert Museum, which also administers the house.

### Redevelopment of Canterbury.

THE MINISTER OF TOWN AND COUNTRY PLANNING has informed the Canterbury City Council that he will confirm the compulsory purchase order for the redevelopment of that part of Canterbury which suffered the heaviest war damage.





COMPETITION FOR CIVIC HALL, GUILDFORD. Mr. Leonard F. Richards, A.R.I.B.A., A.M.T.P.I. (*left*), and Mr. Charles W. H. Wright, Stud.R.I.B.A., who submitted the winning design in the competition for a new civic hall at Guildford. (*See page* 710.)

The order applies to an area of nine acres, covering both sides of St. George's-street. It includes the famous St. George's Tower, which is being preserved.

**Modern Theatre Architecture.**

THE INTERNATIONAL THEATRE INSTITUTE is to hold an international conference-exhibition on Modern Theatre Architecture in Paris at the end of June, under the auspices of U.N.E.S.C.O. The conference will start on June 19 and will close on the evening of June 21. The exhibition will be open from June 19-26 inclusive. Further particulars can be obtained from The British Centre of the I.T.I., 9, St. Martin's-court, London, W.C.2.

**Oslo Town Hall.**

OSLO'S NEW TOWN HALL, opened on May 16 by King Haakon, was first planned in 1915. The originator of the idea of this town hall, illustrated on this page, was Hr. Hieronymus Heyerdahl, the eminent lawyer, who was mayor in 1914. The architects, Hr. Arnstein Arneberg and Hr. Magnus Poulsson, were appointed in 1919, but it was not until 1931 that the foundation stone was laid.

The building consists of a vast rectangular block with two rectangular towers which carry it 15 storeys high. The whole exterior, save for certain details in stone, is faced with darkish red brick, and there are various pieces of statuary disposed about it. Leading up to the entrance on the northern side is a courtyard with a fountain, flanked by two arcades in which is an attractive series of 10 large wooden reliefs representing scenes from Norse mythology.

Its interior decoration which has accorded much approval is the result of the work of artists and craftsmen of many kinds. The immense frescoes of the painters, which decorate many of the walls are, perhaps, the most striking contribution.

**Harlow Development Corporation.**

MR. RICHARD COSTAIN, C.B.E., head of the firm of contractors of that name and President of the London Master Builders' Association, has been appointed chairman of Harlow Development Corporation by the Minister of Town and Country Planning.

Two other new members are Dr. Stephen Taylor and Mr. R. B. Williams-Thompson.

Members of the Development Corporation reappointed are Mr. R. O. C. Hurst, J.P., F.C.S., who is now vice-chairman; Mrs. E. A. Newton, J.P., B.A.; Mr. T. H. Joyce, and Mr. A. Reed. J.P., A.C.I.I.

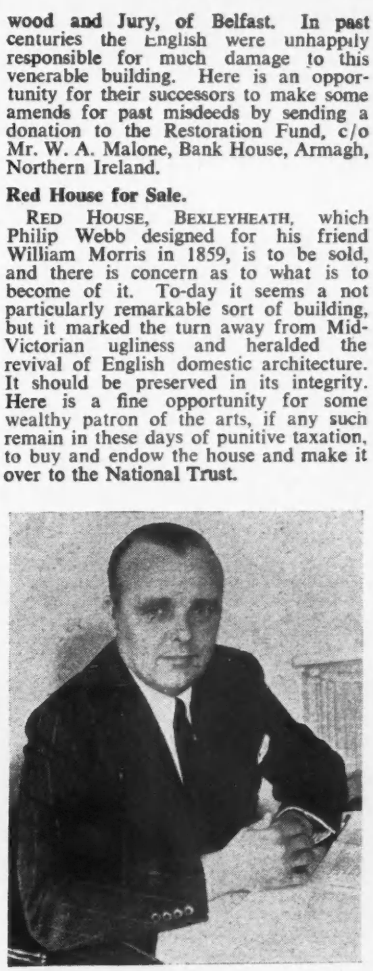
**Armagh Cathedral in Danger.**

AN APPEAL is being made by the Archbishop of Armagh for £15,000, the cost of restoring the fabric, which has been found to be in a serious condition. Founded in A.D. 444 by St. Patrick, the church has had a turbulent history, having been pillaged, burnt and restored again and again. The present building in its plan dates from 1268, but the building itself was burnt down in 1556 and left in ruins until 1613, when it was re-roofed and restored, only to be burnt down again in 1642. Restored again in 1662, it has not since suffered from violence or devastation, though extensive repairs had to be made in 1834, when it was also refaced externally under the direction of L. N. Cottingham. Now, long overdue restoration and repairs must be carried out. The architect in charge of the work is Mr. Arthur E. Jury, of Messrs. Blackwood and Jury, of Belfast. In past centuries the English were unhappily responsible for much damage to this venerable building. Here is an opportunity for their successors to make some amends for past misdeeds by sending a donation to the Restoration Fund, c/o Mr. W. A. Malone, Bank House, Armagh, Northern Ireland.

OSLO TOWN HALL, opened by King Haakon on May 16. (*See Note.*)

**Red House for Sale.**

RED HOUSE, BEXLEYHEATH, which Philip Webb designed for his friend William Morris in 1859, is to be sold, and there is concern as to what is to become of it. To-day it seems a not particularly remarkable sort of building, but it marked the turn away from Mid-Victorian ugliness and heralded the revival of English domestic architecture. It should be preserved in its integrity. Here is a fine opportunity for some wealthy patron of the arts, if any such remain in these days of punitive taxation, to buy and endow the house and make it over to the National Trust.



MR. R. R. COSTAIN, C.B.E., who has been appointed chairman of the Harlow Development Corporation. (*See Note.*)

**Artists' Charities.**

THE 1949 ANNUAL REPORT has been issued of the Artists' General Benevolent Institution and the Artists' Orphans' Fund. Since the establishment of the Institution over half a million pounds have been distributed. The Orphans' Fund was established to support and educate the orphan children of artists.

**Professional Announcements.**

MR. GEO. TALBOT BROWN, F.R.I.B.A., practising as Geo. T. Brown & Son, has taken into junior partnership Mr. Neil McLeod Robertson, A.R.I.B.A. The practice will continue under the style of Geo. T. Brown & Son, as before, from Barclays Bank-chambers, 53, Fawcett-street, Sunderland.

MR. F. W. ASHALL, M.B.E., A.R.I.C.S., has relinquished his appointment as chief quantity surveyor with the county architect, Cheshire County Council, and will practise on his own account at 365, Manchester-road, Warrington. Tel.: Warrington 1445.

MESSRS. R. W. GREGORY AND PARTNERS, consultant electrical and mechanical engineers, of Newcastle-upon-Tyne and Bristol, announce that they have opened an office at Regent House, 30, Cannon-street, Manchester, with Mr. S. Jewsbury, B.Sc., A.M.Inst.C.E., A.M.I.H.V.E., as their resident partner.

## COMING EVENTS

**Wednesday, May 31.**

ARCHITECTURAL ASSOCIATION.—Talks on "The School and the Artist," by Messrs. T. F. Coade, M.A., John Hills, M.C., M.A., and John Newsom, M.A. A.A., 36, Bedford-square, W.C.1. 8 p.m.

**Thursday, June 1.**

COUNCIL FOR THE PRESERVATION OF RURAL ENGLAND.—A.G.M. 66, Portland-place, W.1. 2.30 p.m.

## FROM "THE BUILDER" OF 1850

*Saturday, May 25, 1850*

THE DUKE OF YORK'S COLUMN, WATERLOO-PLACE.—At the inquest on the body of the unfortunate individual who precipitated himself from the top of the Duke of York's Column a short time ago, a hope was expressed that a cage-work of iron would be put over the top, as at the Monument in the city. We grieve to find that this has been listened to: the column is already ugly enough without being further disfigured; and there is no sufficient ground to justify the step. We might just as well put a grating over the Thames, and allow no man to use a razor because one destroyed himself when shaving.

# CORRESPONDENCE

## R.I.B.A. and Its Committees

To the Editor of *The Builder*.

SIR,—I have read with great interest the letter of Sir Lancelot Keay, which appeared in your issue of May 19, regarding the above matter.

With the utmost respect for the views of our esteemed Past-President, for whom I have a profound regard, I must confess that he has failed to convince me that the administration of the R.I.B.A. is incapable of improvement. In my view that is far from being the case. If the Councils of the Royal Institute and the Allied Societies are prepared to give this matter judicial consideration, I should be quite willing to attend meetings of members at which the matter can be impartially and thoughtfully discussed, and to place my views more fully before them. I must, however, warn them that the reforms to which I refer in my letter are not the only ones that I have in contemplation.

JOHN SWARBRICK.

3, King's Bench-walk, E.C.4.

## Job Organisation and Architects' Drawings

To the Editor of *The Builder*.

SIR,—With reference to Mr. G. V. Yates' letter in the May 19 issue of *The Builder*, I should like to correct his statement that architects and builders are so well organised in America that quantity surveyors are unnecessary. In fact, every contractor of any size in the U.S.A. employs at least one, known usually as a measuring surveyor. It is true, however, that the status of the independent surveyor over there is rather on par with that of the independent estimator over here. It seems extremely probable that this position, if ever adopted here, would be a great loss to the public at large and the efficiency of the building industry in particular.

It is quite usual practice in the States for a dozen contractors to "bid" for a contract requiring each of their surveyors to take out approximate quantities. Then the successful "bidder" often commissions a more detailed bill of quantities from an independent firm of surveyors in order to check his own quantities, particularly for ordering purposes! I have such a bill before me for a school in Baton Rouge, Louisiana, which runs out to nearly 50 pages and is given in fair detail. In all, 13 bills of rough quantities are thus necessary. Does Mr. Yates pretend that this repetitive method is really more efficient or fairer to tenderers generally?

I think it is fair to sum up by saying that the American building industry is generally ahead on site methods, equipment and construction—mainly due to their immense resources and wealth—but 50 years behind us on contract procedure and tendering.

With regard to the letter by the Secretary of the Institute of Quantity Surveyors in the same issue, my personal belief is that this new body will probably continue to grow and eventually bear relation to the R.I.C.S. in the same way that (say) the Institute of Cost and Works Accountants today compares with the Institute of Chartered Accountants. This should meet the needs of contractors' surveyors wishing to qualify, without the R.I.C.S. departing from their professional standards. Incidentally, what has the Institute of Builders (with their excellent examinations for builders' surveyors) to say on this matter?

Solihull. CHARTERED Q.S.

## Ten Points for Building Efficiency

To the Editor of *The Builder*.

SIR,—Perusal of your reviews of the Reports by the Working Party and the Productivity Team coupled with personal experience prompts me to crystallise the present essential needs in the building industry as follows:

(1) The Government policy of restrictive control must be changed to one of gradual expansion, leading to complete freedom at an early date;

(2) The availability of skilled operatives and technicians must be ensured by attracting a sufficient number of recruits, not only to the trades, but the supervisory grades also, backed by adequate financial inducement and good working conditions;

(3) The availability of materials must be ensured by applying the principles of (2) above to the material-producing industries;

(4) A greater sense of individual responsibility must be developed at all levels, particularly among the operatives, and to encourage this it will be necessary to introduce a national incentive-payment scheme related to output;

(5) Workers must guarantee to produce a fair day's work, towards which the elimination of non-productive time would be a substantial contribution, and must help to reduce the excessive waste, careless breakage and loss of sundry items which occur;

(6) Building owners (individual or corporate) must decide upon their requirements and thereafter resist the natural temptation to introduce "improvements" which they were unable to foresee. Interference with the originally planned scheme must inevitably lead to disorganisation somewhere with consequential additional cost to someone, even though the "improvement" may show in itself a reduction against the contract sum;

(7) Architects must complete the preparation of all necessary working drawings, details, specifications and schedules incorporating the advice and requirements of specialists (consultants and/or sub-contractors), before bills of quantities are commissioned;

(8) Quantity surveyors must prepare comprehensive bills of quantities based upon full information received from the architects, avoiding ambiguous or omnibus clauses or descriptions which cannot but place estimators in the category of definite gamblers. Uncertain factors due, for example, to the nature of the ground, etc., should be covered by provisional sums or quantities;

(9) Contractors must be given the full information referred to in (7) above upon signing the contract, and must at the same time possess an efficient organisation to ensure that the smooth and expeditious progress and completion of the work is not interrupted by default on their part;

(10) Above all, the need is for a radical change in the attitude of many who are occupied in the industry; one's job must no longer be merely the *raison d'être* for the weekly or monthly remuneration, but a responsibility cheerfully undertaken and faithfully discharged. Thus shall we regain a justifiable pride in our achievements and the satisfaction of the creative instinct which is inherent in every man.

ORUTRA, A.I.Q.S.

London, N.W.6.

## Old-Style Building

To the Editor of *The Builder*.

SIR,—I was much interested in a letter headed "On Lime and Cement" in your issue of April 28. The letter went far beyond this title and brought back old times to me so vividly that I felt I would like to add a few experiences. My father was an apprentice carpenter, sharing an attic bedroom in his master's house with another boy who was learning bricklaying. His home was 12 miles from his work and on Monday mornings he had to walk this and be ready for work by 6 o'clock, walking home again after 4 o'clock on Saturdays. In very bad weather he did not go home, and the mistress, for a treat, gave them half an egg each for breakfast on Sunday morning. He stuck it and became journeyman foreman and then bought a small business.

Times were then such that a row of ten three-bedroomed houses were built for the cost of one to-day. There was little piecework except plastering and slating. Plastering was let at £5 per house for labour only and all ceilings were lathed with cleft laths and three coats plastered, while studding, of which there was quite a quantity, hid lathing and two coats, and the rooms were warm and cosy. The present-day plasterer gets £40 per house and sheets of plaster board take the place of real plastering.

Bricks then cost about 30s. per 1,000 delivered by rail or boat, and brickwork was priced at 4s. 6d. per yard or a little over. Wages, as your correspondent says, were low, but should a man be away ill a week a whip round was made for him with the employer's name (usually) at the top of the list. The traditional 1,000 bricks a day was not a legend then, but frequently a reality, and I know of one case where two bricklayers in one day laid or dropped, mostly dropped, 7,000 bricks in a works chimney stack foundation. There was then no smoking at work; what a change from to-day and how much more time for real work!

During the recent war-time the writer was engaged on an aeroplane works extension, where, in the workshops, smoking was strictly prohibited, but the sanitary block and passages thereto were thronged with smokers the whole day except at meal and snack times.

Personally, I began planing floor boards by hand more than 75 years ago and at the present time in my 90th year am helping a young builder friend with his technical work (part-time) and enjoying it.

W. H. SMITH.

Kidderminster.

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**Woodlands Saved.**

THE MINISTER of Town and Country Planning, Mr. Hugh Dalton, has used his powers to save a well-known stretch of woodland country on the Plas Madoc estate, Denbighshire, near the area of the proposed National Park in Snowdonia.

An appeal had been made by the Wrexham Saw Mills against the refusal of the Denbighshire County Council to permit the felling of 755 trees. Permission has been given by the Minister for the felling of 174 trees, which will be duly marked. Conditions imposed are that felling operations should be carried out so that damage to the remaining trees is avoided, and that all lop and top and deadwood should be removed and the area left clean and tidy. Mr. Dalton's main reason for saving the trees is that they form an especially beautiful feature of the landscape.

# POTENTIALITIES OF PLASTICS IN BUILDING.—2

By J. B. SINGER, B.Sc. (Arch.)

## Glazing

THE potentialities of plastics in their use as a glass-like material were realised already by pioneers like Schonbein, who experimented with nitrocellulose. Research was carried out to develop a material of greater strength and stability than ordinary cellulose sheets. The successful production on a commercial scale of Perspex from methacrylic esters has established its place in industry. This new product is non-vitreous and non-splintering; it superseded the previously used cellulose acetate sheets, mainly because of its good dimensional stability.

Perspex is a thermoplastic resin product of exceptional transparency, which has been extensively used for aircraft. Its light transmission is better than that of glass, and its lightness offers scope, particularly in the buildings where reduction in dead load on roofs, etc., is of considerable importance. Perspex ⅛ in. thick weighs only 0.9 lb./sq. ft., in comparison with 3.6 lb./sq. ft. for ¼-in. wired glass. It can be easily shaped owing to its plastic nature, and may be cut, machined, drilled and cemented together to form a strong joint.

In buildings of a large internal space, like workshops and factories, the provision of ample natural lighting is essential. The glazing area consists of panels permanently fixed, with some capable of opening for the purpose of ventilation. The fixed glazing is in the form of roof- and side-lights. Corrugated acrylic (Perspex) sheets are manufactured for use with asbestos or metal sheeting, and the panels can be screwed directly to structural members. The metal or asbestos sheets overlap the Perspex from the top, and are in turn overlapped below to ensure a watertight structure; it enables the elimination of glazing bars and lead flashings. Perspex sheets weather well and experience has shown that they remain unaffected by normal atmospheric pollution and by most chemical fumes.

Fig. 5.—Corrugated Perspex roof lighting in a factory, Lancs.

Their maintenance is similar to that of glass, and a periodical cleaning is quite adequate.

It is recommended to fix the sheets in chequer-board pattern which utilises the material to its best advantage; but where this is impossible, continuous runs are quite satisfactory. Single sheets are evenly distributed throughout the roof, owing to the simplicity in fixing, and thus an efficient day lighting for the working area is obtained. (Fig. 5.)

A new plastics material which can also be employed with corrugated sheeting for glazing is the polyester-glass mat laminate. The translucent corrugated sheets are between 0.05 and 0.06 in. thick and weigh only 7½ oz. per sq. ft. They can be used and fixed in a similar way to Perspex.

Corrugated Perspex, fixed in a wooden frame, has been further used as a two-storey wall panel in a school at Stevenage. The sheets also lend themselves to decorative applications in stores, offices and homes as light partitions, screens, etc.

## Sound and Heat Insulation

Many plastics are produced as heat insulating materials, mostly in the form of sandwich laminates. A special multi-layer insulating material is manufactured from cellulose acetate film. It has been used quite extensively for insulating buses, passenger coaches, caravans and ship cabins. The hygienic property of the material has been utilised for insulating domestic and commercial refrigerators. There is some scope in the application of it for insulating certain types, or parts, of buildings where its volume weight combined with a high insulation value can result in an economy of construction that offsets the comparative high cost of the material.

Acoustical boards, used for suspended ceilings, are manufactured from specially processed glass fibres treated with phenol formaldehyde resin. The boards are grooved and bevelled to form smaller units resembling tiles.

A Fibreglass preformed wool, which was impregnated with phenolic resin, has been used for sound-proofing the "anechoic chamber" built at the Illinois Institute of Technology for the purpose of research on sound absorption. The room was 11 ft. by 12 ft. by 6 ft. 6 in. high, and studded with 2,500 resin-impregnated glass fibre wedges. The wedges were 8 in. wide at the base and 24 in. high.

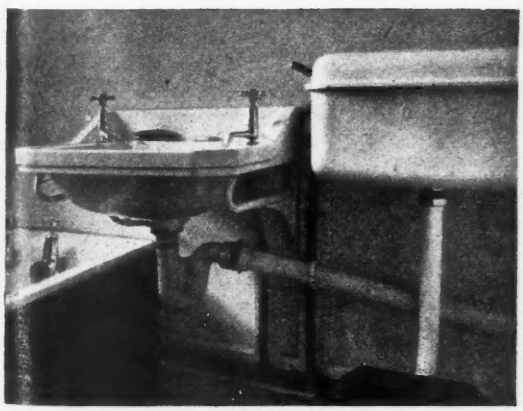

Fig. 6.—Alkathene tube installed in house for cold water plumbing.

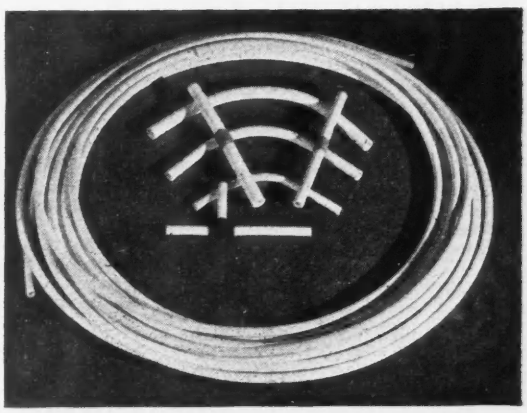

Fig. 7.—Coil of Alkathene tube and a group of associated joints.

The material proved to be ideal for sound absorption. Different thicknesses could be manufactured to any required size. The experimental room was separated by an air gap of 2 ft., and it was built inside a concrete-walled chamber lined with 2-in. slabs from the impregnated glass fibre.

## Plumbing and Drainage

Plastics have many inherent properties that commend their application for water supply pipelines. Corrosion resistance is one of the main attributes required in a material continuously exposed to water which may contain chemical compounds of detrimental nature to the material. Plastics, unlike most metals, are not subject to the corrosive action of chemicals. Freezing of water, with subsequent solidification and expansion, causes stresses which may result in the bursting of pipes, a common failing of traditional water installation. By comparison, plastics have a low thermal conductivity combined with elasticity; these qualities respectively minimise the danger of freezing and allow for dimensional changes. The contraction of plastics, which is in any case negligible on lowering the temperature to freezing point of water, is neutralised by the flexibility of the material.

These advantages drew the attention of manufacturers and research workers to the possibilities of utilising plastics for water supply pipelines. The first plastics used in plumbing were in the "Synthetic House" at the Frankfurt Exhibition in 1938. The pipes were produced from extruded polyvinyl chloride, and they were welded and cemented together. The main shortcoming of the material was the low melting point.

Wartime shortages and the necessity for saving metals led to the investigation into the use of plastic tubing for plumbing in place of traditional materials. In Britain a polythene tube has been developed for cold water plumbing installations, and it is manufactured by the I.C.I. under the trade name of "Alkathene" (Fig. 6). Apart from the corrosion and frost resistance common to other plastics materials, polythene is non-contaminating and 11 times lighter than lead. This property enables easy handling and manipulation; cutting and jointing of pipes are speedily performed, and the cost per unit length is more economical than that of corresponding lead and wrought-iron pipes. Flexibility of the polythene tubes allows curved runs which avoid obstructions without the necessity of special bends. (Fig. 7.)

The "Alkathene" tube is available in 50-ft. and 100-ft. coils with ½-in., ¾-in. and 1-in. internal diameters. The tubes are manufactured in two thicknesses of $\frac{3}{16}$ in. and ¼ in. for industrial and chemical plant and cold water plumbing, respectively. The thicker wall section is designed to resist water pressure and impart a greater rigidity to the tubing, reducing the necessity for frequent supports to horizontal and vertical runs. The tubes are manufactured in white or black colours, and both are suitable for indoor use where they are not exposed to direct ultra-violet rays. White pipes deteriorate when exposed to sunlight, and therefore only the black type, which contains inert non-toxic pigments, can be used externally.

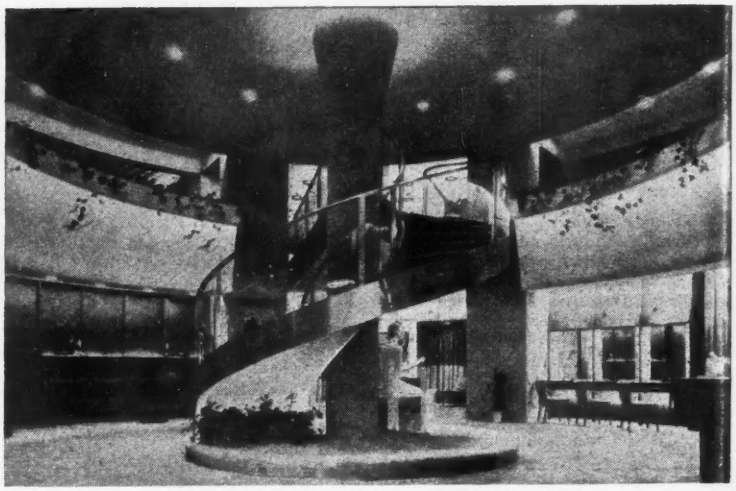

Fig. 8.—Methacrylic sheets in the balustrade of a winding staircase.

Future investigations will be in the direction of the possible utilisation of plastics tubing for drains. Rapidity and ease of laying considerable lengths of pipes would contribute to saving in cost. Flexibility of the tubes could enable the by-passing of obstructions and following curved paths in one continuous run without the use of special bends liable to impede efficient drainage. Elimination of the frequent joints that are necessary in normal earthenware pipes is an important factor in providing ease of maintenance in drainage installations. Joints between the lengths of pipes could be arranged to coincide with manhole positions to facilitate inspection. The plastics pipes could be encased in concrete in the usual manner to give protection from earth pressure. This new development suggests itself on the basis of an already established application of polythene pipes in agriculture for irrigation purposes, where experience to date has proved the resistance of plastics to soil corrosion.

## Flooring

Vinyl floor tiles and sheets provide another instance of new applications of plastics. The first vinyl flooring was made from vinylite resins for the "Vinylite House" in 1933. Since that time considerable progress and improvements have been made. The problem of shrinkage has been overcome by the use of proper fillers, arranging the tiles with laminations at right angles to each other, or by laminating vinylite tiles to a sheet of inorganic substance. Different types of tiles are produced by using vinyl chloride, copolymer of vinyl chloride or vinylidene chloride. Special adhesives are used for cementing the tiles to the sub-floor. The tiles are usually laid with a quick application of heat and followed immediately by pressing them to the sub-floor with a wet cloth. The tiles can be laid directly on cement screeded concrete, but for a wooden floor they require a layer of felt, or similar underlay, to eliminate any unevenness of the surface.

Vinylite resins are also used in the manufacture of roll flooring. The rolls are 72 in. wide and are produced in different colours which are usually marble grained. The flooring is manufactured from vinylite resins with asbestos and other inorganic fillers. Laying is comparatively easy owing to the flexibility of the material. Durability and good appearance and resistance to acids and alkalis enable the plastic tiles and sheets to compete with already established floor coverings.

The design of buildings accommodating chemical plant entails the problem of protecting foundations and floor reinforcement from the corrosive action of acids, alkalis and other chemicals. Cracks in the floor, or floor finishing materials and in the junction between the walls and the floor, will lead to the penetration of chemicals and subsequent corrosion. Weakening of the structure, differential settlement, or even collapse may result from the disintegrating action of chemicals. Cracks are unavoidable in a large area of flooring due to dimensional changes, and small units, e.g., tiles, present difficulty in obtaining a satisfactory and chemical-resistant joint. Theoretically, a monolithic floor construction would be most economical, but although many materials, including resin-concrete, have been tested, the results have not been entirely satisfactory. A floating type of floor has been evolved with a polythene membrane, in which continuous sheets of this chemical-resistant layer can be formed without the use of adhesives; the jointing is accomplished by heating the adjacent edges and "welding" them together. The polythene foil is laid on the cement screeded sub-floor, covered with an acid-resistant cement, and finished with special tiles and bricks in the usual manner.

## Synthetic Adhesives, Impregnation and Compression

It is difficult to establish a borderline between plastics sheets with wood pulp base and resin-bonded plywood or laminated wood; the difference lies in the percentage contents of plastics to the other material. It was felt that the important properties that synthetic resins

impart to wood justify the incorporation of resin-bonded plywood, laminated wood and similar products under the heading of Synthetic Adhesives.

The chemical compounds originally produced were called synthetic-resin adhesives, owing to their resemblance to natural resins. With further developments, the term "synthetic resins" was used to embrace new types completely different in appearance from the natural resins. In the past, animal glue, casein, albumin and soya bean adhesives have been used in the manufacture of plywood. The problem of producing adhesives for external use and capable of withstanding stresses much greater than was possible by ordinary adhesives had to be solved. During the last war, the lack of raw materials necessary for the production of old glues has been a further stimulus to the use of synthetic adhesives. The development of synthetic resin adhesives resulted in the superseding of former types of glue.

Solid wood is often superior to plywood under column load conditions, but for distributed strength and non-splitting qualities plywood is of greater value. Plywood ribs and gussets have been used in the building up of roof trusses and similar construction. Usually, phenolic resins are employed for the joints in plywood, and urea in assembly joints. Resins containing a small amount of moisture should be used for bonding the plies, and the consideration of strength, resistance to weather, etc., is very important in the selection of a suitable type.

A new application of plastics in the plywood industry was in the manufacture of a phenolic resin laminated paper, which is bonded to plywood to make the material water-resistant. This composite material is used for house construction in the form of corrugated external panels. It has the advantage of incorporating softwood plies on the outside to be protected by the phenolic material. The use of softwood veneers has made the manufacture more economical.

An interesting development in plywood was the use of stressed skin panels. They were built from Douglas fir plywood and pressure glued on each side to light studs. Both faces were set at the same time and the glue line heated by the radio frequency process.

Laminated wood presents a challenge to designers to-day as a new medium capable of producing some of the most dramatic structures of the century. The application of synthetic resins has overcome many shortcomings of wood as a constructional material. The allowable stresses in the laminated members are higher than in timber on account of a lowered moisture content and a reduced elasticity. Unlike timber, where structural members have constant dimensions, the laminated members can be tapered, and thus a great saving in wood is achieved. The calculation of stresses in a laminated member enables one to decide on the amount of tapering.

Comparatively narrow and thin strips of wood are cemented together by synthetic resins to form a laminated structural unit. Laminated wood differs from plywood in this respect—that the grains in the consecutive plies are parallel, while in plywood they run at a right angle to each other. The cementing takes place under a specified pressure and temperature. Air clamps or hydraulic presses are used for bending laminated wood. It is necessary to stagger the joints along the bend in order to maintain a uniform strength throughout.

The use of synthetic resins for wood impregnation and compression has contributed to the improvement of dimensional stability, lateral strength, toughness and surface hardness of wood. The durability of wood under exposed atmospheric conditions has been also increased.

In the manufacture of the material, wood veneers are usually impregnated with hot press phenol-formaldehyde resin, and the layers of veneers are bonded together with the resin. The impregnation is carried out normally under an alternating vacuum and pressure. In some cases it is sufficient to impregnate only the outside layers of veneers, producing a hard-wearing surface and retaining the normal soft core of plywood. This product has the advantage of lightness in comparison with a compressed type of the same thickness. The process can be reversed by making the sandwich board with a hard core of impregnated wood, and soft skin useful for fixing on to additional attachments.

New processes claim to convert softwood into hardwood by impregnation and compression. The importance of this development must be fully appreciated as it opens new possibilities of substituting hardwood by softwood, where greater strength and durability are required. Tensile and compressive strength, and resistance to flame and to the action of most chemicals, would be also increased.

### Plastic Timber (Plimberite)

Among other processes transforming wood waste mixed with resins into building boards is the recently developed process by British Plimber, Ltd. The proportion of raw materials is 90 per cent. of sawdust to 10 per cent. of cresol-formaldehyde resin.

Plimberite is used mainly for interior construction, and is not suitable for external use unless well protected. It can be employed for roof lining to be covered by asphalt, tile or slate. Partitions are erected in the normal way with timber, or metal, framing, and then Plimberite panels are fixed in position. Various finishes can be applied to the material, including veneering, painting, distempering, etc.

### Conclusion

A comprehension of the potentialities and limitations of plastics is essential in the appreciation of this new material. Success in its use depends on the co-operation between manufacturers of plastics and the building industry. The possibilities of plastics are unlimited, but imagination and initiative on the part of manufacturers should be the stimulus to further research into the application of this versatile material to building. Practical trial is the only basis for the acquirement of knowledge and assessment of the value of every new development.

We acknowledge permission to reproduce photographs as follows: Figs. 5, 6 and 7, I.C.I.; Fig. 8, Rohm and Haas Co., Ltd.

*(Concluded.)*

## R.I.B.A.

### Notes from Council Minutes

FOLLOWING are notes from the minutes of the R.I.B.A. Council meeting held on May 2:—

*Appointments.*—(a) International Association of Bridge and Structural Engineers: Congress 1952: R.I.B.A. representative—Mr. Graham Dawbarn (F); (b) R.I.B.A. Codes of Practice Committees: Code Committee for Code 310: Water Supply, and Drafting Committee B—Mr. Denzil Nield (A) in place of the late Mr. A. H. Barnes (F); (c) Public Works and Municipal Services Congress and Exhibition: Olympia, London, November 13-18, 1950; Chairman for session sponsored by R.I.B.A., Mr. C. H. Aslin (vice President).

*R.I.B.A. Distinction in Town Planning.*—The Council conferred the distinction in town planning upon Mr. Thomas E. North (F).

*Revised Code of Professional Practice.*—As desired by the Council, the Practice and Salaried and Official Architects' Committees have carried out a complete revision of the Code of Professional Practice. The revised Code was approved by the Council and will in future be known as the Code of Professional Conduct.

*Nomination List for Council Election.*—The secretary reported that Mr. John Needham (F) was unable to accept the Council's nomination for election.

*Revision of the Bye-laws.*—The Council approved the recommendations of the sub-committee which had been convened to submit proposals for revision of the bye-laws with a view to bringing various provisions up to date. In accordance with the provisions of clause VIII of the Charter of 1887, the proposed revisions will be submitted to the general body of members at general meetings for approval and confirmation.

## STANDARD FORM OF CONTRACT

### L.C.C. Decision

AT THE MEETING of the London County Council held on May 23, the General Purposes Committee reported that, as a result of representations from the London Master Builders' Association that the Council should adopt for its major building works the standard form of contract published by the Royal Institute of British Architects, a deputation from the Association was received on February 6.

The Committee stated that they considered carefully the views expressed by the deputation, but could not recommend the adoption by the Council of the R.I.B.A. standard form, which did not meet the Council's requirements in all particulars. The report continued—"We do, however, agree that it would be desirable for the form used by the Council to be related as closely as possible to one widely used. Consideration is accordingly being given to the possibility that the Council's standard form of contract might be adapted, without departure from its essential principles, so as to follow the wording used in the R.I.B.A. form in so far as this has the same effect as that in the Council's present form.

"The Council's new standard form would thus have three component parts—(1) standard clauses using the R.I.B.A. form of words; (2) standard clauses required by the Council, and (3) special clauses relating to the particular job."

The Committee are to report further when their investigation of the possibility of such an adaptation has been completed.

# PRICE BUILD-UP TO-DAY

## (Third Series, No. 6)

By "CAIN" (V. C. ABELL)

## Formwork and Reinforcement

REINFORCED concrete in suspended floors and flat roofs in small areas is more common to-day than in pre-war years, and its use for outhouse roofs to County Council and Local Authority houses may well become a permanent feature of this class of work.

For large areas of suspended concrete or repetition work, metal trays or troughs with adjustable props are more economical in cost as formwork than timber, and whilst many contractors, large and small, regard the adjustable props as part of their necessary equipment, this article deals with timber formwork which is still in common use on many housing schemes.

FORMWORK. For the purposes of building up a price it has been assumed that all timber is softwood (if hardwood is used the cost of materials and labour should be increased), that the boarding is 1¼ ins. thick, bearers 2 ins. x 5 ins., struts 3 ins. x 6 ins. and ties, braces and cleats 1 in. x 2 ins. The storey height is taken as 8 ft.

The S.M.M. states that that part of the formwork in actual contact with the surface of the concrete shall be measured. This bare statement may deceive an inexperienced estimator when building up prices for soffit of eaves or beams, as considerably more timber is required than the bare width stated ; the soffit of a beam 12 ins.

### BAR REINFORCEMENT

| Description of item | Materials | | Cost | | | Labour | Cost | Total cost | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Rods cut to length, bent to shape, hooked at ends and tied at intersections | Mild steel rods | Annealed wire | Mild steel rods at per cwt. | Annealed wire at per lb. 5.5d. | Total cost of materials | Bender and fixer | Bender and fixer at per hr. 34.42d. | Collection | | |
| | cwts. | lb. | pence | pence | pence | hours | pence | pence | s. d. | Unit |
| ¼-in. dia. mild steel rods and embedding in suspended concrete floor or flat roof. | 1.05 | 2.00 | at 32s. 403.20 | 11.00 | **414.20** | 6.75 | **232.33** | 646.53 | **53 10½** | **per cwt.** |
| ⅜-in. do. do. do. | 1.05 | 1.10 | at 31s. 390.60 | 6.05 | **396.65** | 5.50 | **189.31** | 585.96 | **48 10** | do. |
| ½-in. do. do. do. | 1.05 | .80 | at 29s. 9d. 374.85 | 4.40 | **379.25** | 4.50 | **154.89** | 534.14 | **44 6¼** | do. |
| ⅝ to 1 in. do. do. do. | 1.05 | .40 | at 29s. 365.40 | 2.20 | **367.60** | 3.75 | **129.07** | 496.67 | **41 4¾** | do. |
| ¼-in. dia. mild steel rods in links and stirrups embedded in beam. | 1.05 | 3.00 | at 32s. 403.20 | 16.50 | **419.70** | 9.50 | **326.99** | 746.69 | **62 2¾** | do. |
| ⅜-in. do. do. do. | 1.05 | 1.70 | at 31s. 390.60 | 9.35 | **399.95** | 7.50 | **258.15** | 658.10 | **54 10** | do. |
| ½-in. do. do. do. | 1.05 | 1.20 | at 29s. 9d. 374.85 | 6.60 | **381.45** | 6.00 | **206.52** | 587.97 | **49 0** | do. |
| ⅝ to 1 in. do. do. do. | 1.05 | .60 | at 29s. 365.40 | 3.30 | **368.70** | 4.75 | **163.49** | 532.19 | **44 4¼** | do. |

### FORMWORK

| Description of item | Materials | | | | | Cost | | | | Labour | Cost | Total cost | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sawn timber, including bearers, struts, ties and braces | Boarding, ties and braces | Number of times used. | Bearers, struts and wedges | Number of times used. | Nails | Timber: Boarding, ties and braces at 10/3 | Timber: Bearers, struts and wedges ft. cube | Nails at per lb. 4.2d. | Total cost of materials | Carpenter erecting, striking cleaning and stacking | Carpenter at per hour 37.13d. | Collection | |
| | ft. cube | No. | ft. cube | No. | lb. | pence | pence | pence | pence | hours | pence | pence | s. d. |
| Formwork to soffit of suspended concrete floor or flat roof (1 yd. sup. taken) | 1.16 | 5 | 2.06 | 10 | .21 | 28.53 | 25.33 | .88 | **54.74** | 1.50 | **55.69** | 110.43 | **per yd. sup. 9 2½** |
| Do. to soffit of overhang at eaves n.e. 3 ins. wide (12 ft. run taken) | 1.90 | 5 | 3.20 | 10 | .30 | 46.74 | 39.36 | 1.26 | **87.36** | 2.00 | **74.26** | 161.62 | **per ft. run 1 1½** |
| Do. to edge of suspended concrete n.e. 6 in. high, including supports (12 ft. run taken) | 1.03 | 5 | — | — | .15 | 25.33 | — | .63 | **25.96** | .80 | **29.70** | 55.66 | **per ft. run 0 4¾** |
| Do. to soffit and sides of beam (Assumed cross - sectional area of beam 144 ins.) (18 ft. sup. of formwork taken) | 3.30 | 5 | 3.5 | 10 | .40 | 81.18 | 43.05 | 1.68 | **125.91** | 4.50 | **167.08** | 292.99 | **per ft. sup. 1 4¼** |

wide will require 20 ins. of boarding, the apparent overhang on each side being necessary to support the formwork to the sides of the beam and for fixing the bracing ; likewise the boarding to soffit of eaves must support the formwork to edge of suspended concrete. The design of the formwork is invariably left to the contractor so that this item requires some collaboration, before the work commences, between the estimator and the foreman on site.

REINFORCEMENT. The man-hours shown in the analyses are based on the output of a qualified bar bender and fixer whose official wage rate is threepence per hour less than the current standard craftsmen's rate. The services of a qualified bar bender are hard to come by, so that we invariably see a craftsman doing the bending work and an unskilled labourer fixing ; in such cases the labour constants per cwt. should be increased.

The rates given are the net cost on site, exclusive of site supervision, establishment charges and profit. Grade " A " wage rates taken. For the method employed of arriving at the cost to the employer of employing labour, see *The Builder* for February 10, 1950, or " Price Build-Up To-day " (Consolidated Edition), the Publisher, *The Builder*, 4, Catherine-street, Aldwych, W.C.2, price 7s. 10d., post free.

# THE TOWN AND COUNTRY PLANNING ACT, 1947

## The Town and Country Planning General Development Order and Development Charge Applications Regulations (Statutory Instrument, 1950, No. 728)—1

By NORMAN P. GREIG, B.A., Barrister-at-Law., F.R.San.I., F.I.Arb., etc.

FROM May 25 the above regulations become the general order, applicable to all land in England and Wales, and providing for the grant of permission for development of land under Part III of the 1947 Act. It replaces the Town and Country Planning (General Development) Order, 1948 (as amended by two further Orders), and the Town and Country Planning (Making of Applications) Regulations, 1948. In it (Article 5(2)) is provision for a new form of application not requiring the submission of full details of proposed building operations. The range of development, also, is widened by extensions and alterations (in classes I, VI, VII and VIII), and a new class XXII is added. The developments permitted by the new Order are, however, subject to conditions which are set out opposite the description of development, which conditions are either " standard " or those applying specifically to the particular class.

The Regulations reproduce those parts of the Town and Country Planning (Making of Applications) Regulations, 1948, which were concerned with development charge, and prescribe the manner in which applications can be made to the Central Land Board to determine, vary or confirm a development charge.

It follows, therefore, that the new Order is an attempt to meet, to some extent, some of the many criticisms that have been made to the working of the Act up to the present time, and particularly by the widening of the range of developments permitted by previous Orders.

Readers will remember that the definition of " development " in the Act (Section 12(2)) is somewhat comprehensive. Below, however, development from the point of view of the builder, will be mainly the subject of the present articles. A particular point to notice is that the Order has been extended to meet matters concerning development in relation to certain special roads under the Special Roads Act, 1949 (roads used for special purposes), and powers are included similar to those now exercisable by the Minister of Transport in regard to trunk roads under the Trunk Roads Acts.

The Order, etc., is divided into Parts; Part I being the General Development Order, with two Schedules; Part II, the Development Charge Applications Regulations; and Part III General Citation and Commencement.

### Part I.—The General Development Order. Article 3 (and the First Schedule).

Herein are given the developments *permitted without permission* of the Local Planning Authority or the Minister, as the case may be, but subject to the conditions given in each case. No development contrary to a condition is permitted or granted except by the present Order. In regard to developments under local or private Acts or Orders requiring permission, these are not allowable without the necessary permission.

The " standard " conditions, applying where stated, are as follows: (1) The permission given is not to authorise any development involving the formation, laying out or material widening of a means of access to a trunk or " classified " road (as defined by the Trunk Roads Acts (1936 and 1946)), and (2) no development shall create an obstruction to the view of persons using any road used by vehicular traffic at or near any bend, corner, junction or intersection so as to be likely to cause danger to such persons.

**Class I.—Development within the curtilage of a Dwellinghouse.**

1. The *enlargement, improvement* or other *alteration* of a dwellinghouse so long as the cubic content of the original dwellinghouse (as ascertained by external measurement) is not exceeded by more than 1,750 c. ft. or one-tenth whichever is the greater, subject to a *maximum* of 4,000 *c. ft.;* provided that the erection of a *garage, stable, loose-box* or *coach-house* within the curtilage of the dwellinghouse shall be treated as the enlargement of the dwellinghouse for the purposes of this permission.

The conditions attached, apart from the " standard " conditions which apply here, are: (1) the height of such building must not exceed that of the original dwellinghouse, and (2) that no part of such building must project beyond the forwardmost part of the front of the original dwellinghouse.

2. The *erection, construction* or *placing,* and the maintenance, improvement or other alteration, within the curtilage of a dwellinghouse, *of any building or enclosure (other than a dwelling, garage, stable, loose-box or coach-house)* required for a purpose incidental to the enjoyment of the dwellinghouse as such, including the *keeping of poultry, bees, pet animals, birds* or other livestock for the domestic needs or personal enjoyment of the occupants of the dwellinghouse.

Apart from the " standard " conditions, the height is not to exceed, in the case of a building with a ridged roof, 12 feet, or, in any other case, 10 feet.

**Class II.—Sundry Minor Operations.**

1. The erection or construction of *gates, fences, walls,* or other means of enclosure not exceeding four feet in height where abutting on a road used by vehicular traffic or seven feet in height in any other case, and the maintenance, improvement or other alterations of any gates, fences, walls or other means of enclosure.

2. The *painting of the exterior* of any building or work otherwise than for purposes of advertisement, announcement or direction.

The " standard " conditions apply here, the special condition being that " no improvement or alteration shall increase the height above the height appropriate for a new means of enclosure.

**Class III.—Changes of Use.**

(Reference should be made to the Town and Country Planning (Use Classes) Order, 1948.)

Development which is a charge of use in these cases:

(*a*) Use as a *light industrial building* from use as a *general industrial building;*

(*b*) Use as *any type of shop* from use as (i) a fried fish shop; (ii) a tripe shop; (iii) a shop for the sale of pet animals or birds; or (iv) a cats'-meat shop;

(*c*) Use for any purpose within Class I of the Schedule to the Use Classes Order, from use as a restaurant.

The permission in this case is unconditional.

**Class IV.—Temporary Buildings and Uses.**

1. The erection or construction on land in, on, over or under which operations, other than mining operations, are being

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or about to be carried out in pursuance of planning permission granted or deemed to be granted under Part III of the Act, or on adjoining land, of *buildings, works, plant or machinery needed temporarily* in connection with those operations, for the period of such operations.

In this case the "standard" conditions apply, and the special conditions are: (1) such buildings, works, plant or machinery shall be removed at the expiration of that period, and where they were sited on any such adjoining land, that land shall be forthwith reinstated.

2. The use of land (other than a building or the curtilage of a building or the site or curtilage of a building which has been demolished in consequence of war damage) for any purpose on not more than 28 days in total in any calendar year, and the erection or placing of *moveable structures* on the land for the purposes of that use.

The "standard" conditions are to apply.

(NOTE.—The italics above are the author's.)

*(To be continued.)*

# THE COST OF HOUSE BUILDING

## Second Report of the Girdwood Committee

THE Second Report of the Committee appointed by the Minister of Health in June, 1947, "to consider and keep under review the costs of house building and to make recommendations" has been published by His Majesty's Stationery Office.

The Committee—known as the Girdwood Committee—state that in this Report they have concentrated on consideration of:

(i) Changes which have occurred in the costs of building local authority houses between October, 1947, and October, 1949, and

(ii) The possibilities of lowering the present level of costs.

They point out that special significance attaches to the period covered by their review because the November, 1947, increase in building trade wages was coupled with an agreement for introducing a new system of incentive payments for an experimental period of two years.

The Report does not deal with costs of private enterprise house building. The Committee state, however, that they are engaged upon an investigation of the costs of some of these houses.

*Building Cost of Local Authority Traditional Three-bedroom Houses.* The Committee estimate that the cost of the average house completed in October, 1949, was £1,321 as compared with the estimate in their First Report of £1,242 for the cost of the average house completed in October, 1947. This net increase of £79 is stated to be comprised as follows: (a) an increase of £104 attributable to a rise in the general level of house building costs; (b) an increase of £16 attributable to an increase from 1,029 to 1,050 sq. ft. in the size of the average house; and (c) a saving of £41 attributable to simplified design and specification.

The general level of house building costs is estimated to have been 160 per cent. above the 1938-39 level in 1949, as compared with 149 per cent. in 1947.

The cost of materials for the average 1949 house is estimated at £86 more than for the average 1947 house, despite some decrease in quantity of materials used. On the other hand, labour cost is estimated to have decreased by £9, increases due to bonus payments, increased wage rates and the larger size of the 1949 house having been more than offset by savings consequent upon improved output and economies due to simplified design and specification.

**Productivity.**

The Committee estimate that between 1947 and 1949 there has been an average reduction in manhours for a given type of house of about 13 per cent., but that manhours are still 26 per cent. above the 1938-39 level on average (as compared with 45 per cent. above that level in 1947), so that there is still a long way to go before the pre-war level of productivity is reached. The major factors which have contributed to the improvement in productivity are stated to be:

(a) Progress of housing contracts is, in general, no longer delayed on account of shortages of materials;

(b) The labour force is now generally adequate for the work in hand;

(c) The overloading of the building industry has been corrected;

(d) Increased experience has been gained by all concerned in house-building operations;

(e) Weather conditions have been good in 1948 and 1949; and

(f) Incentive schemes have been introduced on a proportion of contracts.

*The Effect of Incentive Schemes.* Of the average reduction in manhours per house between 1947 and 1949, rather less than half is estimated to have been associated with the introduction of the incentives agreement and its application in varying degrees to about half the houses built. The Committee also state that it seems to them from the evidence they have on most contracts to which incentive schemes have applied that there has been a net saving in cost per house attributable to the application of incentive schemes, and that on average this saving might be of the order of £15 per house.

The Committee point out that considerable experience of operating incentive schemes has now been gained, and express the view that, with the co-operation of both sides of the industry in all parts of the country, incentive schemes could be more generally applied and play an important part in securing further reductions in manhours with some consequent reduction in cost.

*The Effect of the Size of Contracts.* The Committee state that the available evidence suggests that a saving in cost per house can be secured by building houses in larger contracts, and they consider that where circumstances permit local authorities should plan their housing programmes accordingly. At the same time the Committee recognised that there are many factors influencing the number of houses in a contract.

**The Range of Costs.**

The Report points out that actual costs for individual contracts vary widely above and below the average figures indicated in the Report, and the conditions that need to be satisfied in order to secure minimum cost for houses of any given accommodation in a contract for any given size are considered. The Committee state that the range of costs has narrowed since 1947, but draw attention to the great range that still exists.

It is also stated that when inviting tenders in an area in which competition is known to be poor, it may be possible to arrange contracts of such a size as to attract not only local contractors but also contractors from outside the area; in some cases a greater readiness to reject tenders even at the risk of a temporary cessation of house building in the area might be desirable.

*Economies in House Building.* A list of possible economies used by technical officers of the Ministry in examining tenders is reproduced as an Appendix to the Report and is specially recommended by the Committee to the attention of local authority technical officers and architects engaged in private practice who are concerned with local authority house building. The Committee point out that an appreciable economy can be achieved by building in terraces and recommend that, wherever practicable, local authority housing schemes should include more terraces and fewer semi-detached houses.

It is also estimated that a reduction of room heights by 6 in. would enable a saving of £15 to £20 per house to be made, and the Committee recommend that local authorities should consider this means of reducing house building costs. The Committee consider that in reviewing their model bye-laws for "Buildings" and "New Streets" the Ministry of Health should keep cost implications prominently in mind.

**Housing Contracts.**

The Committee point out that the form of contract prepared by the Royal Institute of British Architects in conjunction with the National Federation of Building Trades Employers is now used for more than 80 per cent. of local authority housing contracts, and contractors are well acquainted with it. They recommend that local authorities not at present using that form of contract should consider the advantages to be gained by its use as it is now so widely known and understood.

The Committee also recommend that as

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soon as the direct effects of devaluation are apparent, a fresh approach should be made to the National Federation of Building Trades Employers with a view to discontinuance of the price fluctuations clause at the earliest possible date.

*The Effect of High Costs and their Relation to Housing Standards.* The Committee estimate the average cost of the traditional three-bedroom house completed in October, 1949, is £1,515, including cost of land, roads and services and professional fees. They point out that the net subsidised weekly rent of such a house (excluding rates and assuming the present standard subsidy, which is equivalent to 8s. 5d. per week) is 16s. 5d.

The Committee think it improbable that under present conditions there can be any substantial reduction in the general level of house building costs in the near future and state that as far as they can judge on present information the indications are that it may be difficult to avoid a further increase. In these circumstances the Committee do not think it possible to make recommendations which would result in substantial reductions in house building costs while present standards of size and equipment are maintained. At the same time they appreciate that responsibility for decisions regarding housing policy must rest on the Government and realise that cost, though important, is not the only aspect which needs to be considered in determining housing standards.

The Committee adhere to and emphasise the recommendations made in Chapter IV of their First Report that policy regarding standards of accommodation and equipment should be reviewed afresh, and in so doing draw attention to certain specified factors which considerations of cost make relevant to any review of housing policy.

The Report is signed by the Chairman of the Committee, Mr. J. G. Girdwood, C.B.E., and members as follows: Alderman D. H. Daines, J.P., L.C.C.; Mr. C. H. James, R.A., F.R.I.B.A.; Mr. D. Seers; and Mr. W. K. M. Slimmings, C.A.

# BUILDING LICENCES FOR NEW HOUSES

## Meeting "Most Urgent Needs"

THE Ministry of Health has issued Circular 57/50, which deals with building licences for new houses, and is intended to serve as a guide for county councils and other housing authorities. Signed by H. Symon, the circular states:—

1. I am directed by the Minister of Health to refer to Circulars 108/48 and 102/49, and to state that he has given further consideration to the provision which should be made out of future allocations for houses to be built by private builders under licence.

2. Experience has shown that in many districts the numbers of those in the most urgent need of homes make it necessary that if not all, at least nine-tenths of the houses built should be built for letting by the local authorities. In other districts however, those in the most urgent need of homes may include a greater proportion of persons who wish to build a house for their own occupation or whose requirements can appropriately be met by the erection of houses otherwise than by the local authority, but with their approval.

3. Each local authority should consider for themselves the numbers and needs of those who have applied for a council house, and of those who would prefer houses built under licence. It is only in the light of such an examination of the relative numbers and needs of the two groups that the council can form a proper judgment of the proportion in which the houses allocated to them for building should be divided as between the council themselves and private persons building under licence in order to make the most effective contribution to the requirements of those families who are in the most urgent need of houses. The Minister desires, therefore, to emphasise the necessity for this comparative examination before the council come to a decision as to the division of the houses allocated to them.

**Special Housing Needs.**

4. When a local authority are satisfied after such an examination that the most urgent housing needs of their district cannot be met satisfactorily unless licences are issued in excess of the present authorised proportion of one-tenth, the Minister is prepared to leave it to their discretion to increase up to a maximum of one-fifth the proportion of the allocation for 1951 which, in due course, will be made to them by the principal regional officer. If a local authority have evidence which, in their opinion, indicates that even more than one-fifth of the allocation should be devoted to building under licence, the Minister will be prepared to consider exceptionally their proposals, which should be submitted to the principal regional officer with a full explanation of the facts and considerations on which they are based.

5. The arrangements authorised above will apply in relation to the allocations of houses to be made to local authorities for 1951 on which the principal regional officer will communicate with you in accordance with the standing administrative arrangements in the region. Any questions as to detailed adjustments which may be appropriate in the light of regional arrangements for the making of allocations should be addressed to the principal regional officer.

**The Issue of Licences.**

6. I am also to bring to the notice of the local authority the following points in regard to the administrative arrangements for the issue of licences: (a) The issue of the licences available should be spread by the local authority over the relative period so as to facilitate smooth progress and to avoid dislocation of the local building programme.

(b) The Minister is advised by the Minister of Works that he has decided to delete from licences issued by him the condition that construction must be started within two months of the date of issue of the licence. Local authorities should delete this condition from licences which they issue. They should take appropriate administrative action to ensure that persons to whom licences are issued are in fact ready to start work within such reasonable period as they think fit. They should not, however, make the issue of a licence or the promise of one conditional upon the applicant having already acquired a site.

(c) It sometimes happens that an applicant living in one district desires to move to another district and to build a house there for his own occupation. Arrangements have, with the Minister's approval, been made by mutual agreement between local authorities to deal with individual cases of this kind on the basis that the licence is issued by the local authority in whose area the house is to be built on the understanding that the licence is chargeable against the quota of the local authority for the district in which the applicant at present lives. The issue of this licence should be shown in the records of the latter local authority and not in the records of the local authority by whom it is actually issued. By arrangements of this kind a better distribution of housing can often be brought about through the release of the house in which the applicant at present lives. I am to make it clear that these arrangements as indicated above can be made by mutual agreement between local authorities without prior approval by the Department.

(d) The question whether housing accommodation provided by the use of reconstituted parts of timber or other structures, etc., is to be treated as the erection of a new house or as the improvement of a house or conversion of a building must be decided by the local authority on the facts of the particular case. Generally, however, if such housing accommodation is provided on a new site, it must be treated as a new building.

7. Circular 108/48 remains in force with such modifications only as are required to give effect to the preceding paragraphs of this circular.

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**Speed Limit for Goods Vehicles.**

The British Road Federation, 4a, Bloomsbury-square, W.C.1, has sent a letter to all members of Parliament and all local authorities pointing out that it is essential that road transport should be permitted to operate as efficiently as possible and that the existing 20 m.p.h. speed limit must be scrapped without delay.

# IN PARLIAMENT

## Building Policy

ON May 22, on a token vote for £60 for services in connection with the building industry, MR. SANDYS opened a debate on housing. He said that the importance of the debate was heightened by the fact that they had now in their hands the recent reports of the working party on building set up by the Minister of Works and of the Anglo-American productivity team set up on the initiative of the Chancellor of the Exchequer. There had also been published that morning a new report on building costs. Those objective, technical reports confirmed in the plainest fashion the grave criticisms which had been made in debate after debate by the Opposition. In one paragraph after another the working party told of the confusion, exasperation and loss of output which had resulted from the manner in which the Government had misapplied its powers over the building industry. It was, in fact, a grave indictment of the Government's whole administration in that vital sphere.

MR. STOKES, Minister of Works, replying, said it was not true that the Government controlled the building industry at every point. The Government laid down the overall programme, and a great deal was left to the industry to decide, subject to the total availability of materials and labour.

Dealing with the report of the working party on building operations and the report on Anglo-American productivity, he said that the main object must be to get output up and costs down. They could only achieve those objects by collaboration from all sides of the industry.

Incentive schemes were not employed to anything like the extent they should be. Very often it was employers who would not do it. To get better collaboration there must be greater use of joint production committees on the job. There was a great deal to be done with regard to the use of mechanical aids. A far greater use of plant had always been encouraged by his Ministry, but there were economic difficulties. Small employers often could not afford the capital cost of plant. He was looking into the question of how that could be remedied.

His aim was to get production up and costs down.

In the debate which followed, MR. MARPLES said that there were three major points that the building industry had to watch if it was to be efficient, and in each case it had not been able to achieve efficiency because of the framework of controls with which the Government had surrounded it. The three points were preplanning on site, which controls made impossible; the execution of the plan, which was mainly prevented by shortage of materials, even though the Government had £100,000,000 given to them without a division for the Building Materials Bill, 1945; and a smooth flow of orders so that the industry knew what orders it was going to receive several years ahead.

MR. GIBSON said that the Board of Trade must give serious consideration to the costs of materials, which was a free ramp. One or two of the industries had been referred to the Monopolies Commission, but when he had mentioned another he had been told the Commission was so busy it could not take on any more. This particular one was the sand and ballast industry.

MR. MOLSON said that in spite of the great increase in the national income between 1938 and 1948, there had been a decline of nearly 56 per cent. in the number of houses built.

MISS HORSBRUGH, as a protest against the failure of the Government's policy, moved to reduce the salary of the Minister of Health by £5.

MR. BEVAN said that the building industry was, with few exceptions, a private enterprise industry. It was very fragmented. The industry was diluted with all sorts of queer people, all sorts of spivs who had started to work in it and were earning a considerable amount of money. The first thing he had to do was to get rid of the cost-plus system and weed out those who were in the industry merely to make short-term profits. He had a job of the utmost administrative complexity to convert the cost-plus system into competitive tender. His second big difficulty was the bad practice of negotiated prices for houses. One of his chief difficulties was to get the principle of competitive tenders established. The builders had formed themselves into ring after ring all over the country, and were insisting that he should agree to prices which were exorbitant.

They had been told that one of the reasons for the sluggish completion of houses in the first years after the war was that they had asked the machine to do more than it could do. That accusation should really be brought against the building industry itself, not the Minister. No other industry started trying to put through its machine a greater volume of production than the machine could carry.

Were the Opposition prepared to leave it to Tory local authorities, full of speculative builders, to decide how many houses were going to be built to rent and how many for sale? Had that policy been adopted in 1945, there would have been housing riots all over the country.

The motion was defeated by 299 votes to 293—Government majority six.

**Industrial Building.**

MR. BAIRD asked the Minister of Works if, in view of the urgency of the housing position, he would further reduce the ceiling for industrial building without a licence.

MR. STOKES said he did not think this was necessary. [May 1.]

**Wood and Stone Carving.**

In reply to a question by Mr. Keeling, MR. STOKES said he had no precise information as to the number of qualified carvers in wood and stone in the country. Some of them might not be employed in their own craft, but he was not aware of any unemployment. His officers were instructed to grant licences as freely as possible for this work and he hoped to see a revival of these crafts. [May 1.]

**Building Workers.**

On May 2 SIR WILLIAM DARLING asked the Minister of Labour how many persons capable of employment in house construction or repair were unemployed on the most convenient recent date.

MR. ISAACS said that 7,717 craftsmen and 20,273 labourers and others whose last employment was in the building industry were registered as unemployed in Great Britain at March 13 last.

SIR WILLIAM DARLING asked if the Minister could consider taking steps to re-enlist these important and valuable workers in this industry.

MR. ISAACS said there was no need to take these steps because the vast majority of those men who signed on were re-employed within three days in their own industry.

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# NEWS IN BRIEF

**Teachers' Conference.**

The 41st annual conference of the Association of Teachers in Technical Institutions opens in Cardiff to-day and continues until May 29.

**Best Apprentice.**

Eighteen-year-old Donald Sykes, of Cheam, now training to be a joiner, has been chosen as London Transport's best building apprentice of the year.

**The Wells House, Hampstead.**

Messrs. A. E. Thornton-Firkin and Partners, of 17 Fitzhardinge-street, Portman-square, London, W.1, were the quantity surveyors for the above contract, illustrated in our issue of May 5.

**Prize Competition Result.**

The Royal Sanitary Institute announce that the John S. Owens prize of £15 has been awarded to Mr. G. D. Tooby, of Stourbridge, Worcestershire, for his essay on "The ventilation of dwellings and its effect on human health."

**Corby New Town Appointments.**

The Minister of Town and Country Planning, Mr. Hugh Dalton, has appointed the following to the Corby Development Corporation: Mr. Henry Chisholm (chairman); Lord Douglas of Barlouch (vice-chairman).

# TRADE NEWS

**Change of Address.**

H. Meckhonik, Ltd., inform us that they have now changed their address to Granby House, Granby Terrace, Hampstead-road, N.W.1. Tel.: Euston 2241-3.

**Request for Literature.**

We have been asked by the Welwyn Garden City and Hatfield Development Corporations to state that they would be pleased to receive building trade catalogues, literature and samples, etc., at Midland Bank Chambers, Howardsgate, Welwyn Garden City, Herts.

**Firm's New London Showrooms.**

Broad and Co., Ltd., of 4, South Wharf, Paddington, W.2, have recently opened their new showrooms at 22, Praed-street, Paddington, W.2, where they have on display wall finishes, sanitary ware, fireplace and heating appliances and planned unit kitchen equipment. The showroom interiors have been completely redesigned by Mr. John Grey, F.R.I.B.A.

# THE SCOTTISH BUILDER

## NEW BUILDINGS

**East Kilbride.**—Plans to be prepared for new bank buildings and new shops, etc., at Whitcross by the Development Corporation, and for which the architect is Donald P. Racy (F.), Torrence House, East Kilbride.

**Fifeshire.**—C.C. to erect, at Oakley, a new school for infants, for which the architect is R. S. Lawson (F.), County-chbrs., St. Catherine's-st., Cupar, Fife.

**Glasgow.**—Programme of houses and shops, etc., will be carried out by the corporation at Milton, for which the architect is Archibald J. Jury (F.), Council Housing Offices, Glasgow Cross, The Trongate, Glasgow, E.C.

**Glasgow.**—Plans to be prepared for John Allan & Co. (Glenpark), Ltd., for alterations and additions at Glenpark st., for which the architects and quantity surveyors are James Davidson & Son, 9, Academy-st., Coatbridge.

**Lanarkshire.**—C.C. to erect on site at Muirside, Baillieston, a scheme of 32 houses for which the architect is Samuel MacColl, County-chbrs., Beckford-st., Hamilton.

**Lanarkshire.**—Plans to be prepared for National Coal Board, Southern Division, nr. Royal-cres., Edinburgh, for the erection for collieries at Kingshill of new canteen; new pit-head baths and new medical centre, and for which the architect is James Allan, 38, Palmerston-pl., West End, Edinburgh.—Plans to be prepared for a scheme of 36 blocks of houses to be erected at Newarthill sites, and for the Scottish Special Housing Association, Ltd., 15, Palmerston pl., West End, Edinburgh.

# FUTURE CONSTRUCTION

## PUBLIC APPOINTMENTS

*Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.*

## CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

### BUILDING

**MAY 31.**

†**Shardlow (Derby) R.D.C.**—14 houses on the western side of the Priors Park estate, off Nottingham-rd., Borrowash. F. S. Antliff & Son, Draycott, nr. Derby. Dep. £2 2s.

**JUNE 2.**

***Kingston-on-Thames T.C. and Malden and Coombe T.C.**—Buildings on Kingsnympton Hall site, Kingston Hill. H. E. Barrett, T.C., Malden and Coombe Municipal Offices, New Malden.

**JUNE 3.**

†***East Grinstead U.D.C.**—One block of 4 old people's bungalows at Blackwell Farm estate. E. & S., Council Offices. Dep. £2 2s. Tenders by July 1.

†***Essex C.C.**—Adaptations and redecorations at 15 and 17, Prospect-hill, Walthamstow. (Est. cost £1,261.) County A.

†**Whitby (Yorks) U.D.C.**—Erection of 30 houses off Stakesby-rd. Peacock & Bewlay, architects, 224, Hagley-rd., Edgbaston, Birmingham 16.

†***Whitby U.D.C.**—30 houses off Stakesby-rd. Peacock & Bewlay, architects, 224, Hagley-rd., Edgbaston, Birmingham, 16. Dep. £2 2s.

**JUNE 5.**

†**Crook and Willington U.D.C.**—Erection of 45 houses at Howden-le-Wear. C., Council Offices, "Glenholme," Crook, Co. Durham. Dep. £2 2s.

**Manchester T.C.**—Erection and completion of roof to market area at Nos. 76-82, Shudehill &mithfield market. City A., Town Hall, Manchester. Dep. £1.

**Sheffield T.C.**—Erection of 110 houses on the Stradbrooke estate (Unit II) building scheme No. 1, sections I and II. City A., Town Hall, Sheffield. Dep. £1.

**South Westmorland R.D.C.**—Erection of eight houses at Holme; 10 at Staveley; and 22 at Milnthorpe. Middleton & Jones, 1, Queen-st., Lancaster. Dep. £2 2s.

**JUNE 7.**

**Bolton T.C.**—Erection of 120 houses at Padbury-way on Top-o'-th'-Brow estate. Housing Director, Town Hall, Bolton.

**Cleethorpes B.C.**—Erection of (a) twelve type "A," (b) eight type "C," (c) eight type "D," and (d) twelve type "E" houses, all in blocks of four, on the Highgate housing site No. 4. B.E., Council House, Cleethorpes. Dep. £2 2s. each contract.

†***Hendon B.C.**—42 flats at Bittacy Hill, Mill Hill. B.E. & S., Town Hall. Dep. £3 3s.

†**Wandsworth T.C.**—124 dwellings, Roupell Park estate, Brixton Hill, S.W.2. T.C.

### READERSHIP OF "THE BUILDER."

In the issue of *The Builder* for April 28 was included a postcard for completion and return by our subscribers. Our thanks are due to the many who have sent this postcard to us; the information will be of great assistance. May we ask those subscribers who have not yet done so to fill in and return their postcard now.—THE EDITOR.

**JUNE 8.**

***Berks C.C.**—Additional sanitary accommodation at Abingdon County Secondary and Primary Schools. County A., Wilton House, Parkside-rd., Reading. Dep. £2 2s.

***Finchley B.C.**—Reconstruction of dressing rooms at Squires-la. baths. B.E. & S. Dep. £1.

*†**Hampshire Police Authority.**—Police houses at Aldershot, Grayshott and Hook. County Architect, Winchester. Dep. £1 1s. each.

**JUNE 9.**

**Doncaster R.D.C.**—Erection of 22 dwellings at Hatfield-la., Armthorpe. J. A. Williams, surveyor, Nether Hall, Doncaster.

†**Tottenham Boro.**—16 flats, Reynardson's Almshouses site, High-rd., N.17. B.E. Dep. £2 2s.

†***West Suffolk C.C.**—School, Houldsworth Valley, Newmarket. County Architect, 13, Westgate-st., Bury St. Edmunds. Dep. £2 2s. Tenders by July 14.

**JUNE 10.**

***Banstead U.D.C.**—Internal repairs and decorations at Council House. E. & S. Dep. £2 2s.

***Durham C.C.**—Alterations and renovations, Lambton Castle residential college. G. R. Clayton, F., County Architect, Court-la., Durham.

**Great Yarmouth C.B.**—Construction of factory building at Fenner-rd. E., Town Hall, Great Yarmouth.

***Hayes and Harlington U.D.C.**—Repair works to 500 houses, Wood End Park estate. E. & S.

†***Oswestry R.D.C.**—10 houses, Whittingham. Messrs. S. T. Walker, architects, 83, Suffolk-st., Birmingham, 1. Dep. £2 2s.

**JUNE 12.**

***Durham C.C.**—Pair of police houses with office, Whitburn-rd., Cleadon. G. R. Clayton, F., Architect to Police Authority, Court-la., Durham.

**Frome R.D.C.**—Erection of four houses at Standerwick, nr. Beckington. J. Rogers, architect, Radstock, nr. Bath. Dep. £1.

**Wigan (Lancs) R.D.C.**—Erection of 18 houses on Shevington site. Council Surveyor, Bankchbrs., Wallgate, Wigan. Dep. £2 2s.


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**Worsborough (Yorks) U.D.C.**—Erection of 30 houses on Elm House estate, Worsborough Bridge. D. E. Nash, C., Saville House, Worsborough Bridge, Barnsley. Dep. £3 3s.

**JUNE 14.**

***Cardiff T.C.**—16 bungalows for aged people at No. 6 site, Fairwater. City S., City Hall. Dep. £2 2s.

***Darlington C.B.**—54 houses at Haughton South site. Boro' A., Central-bldgs. Dep. £1 1s.

***Dover T.C.**—24 flats at Stembrook. B.E., Brook House. Dep. £2 2s.

**JUNE 15.**

***Essex C.C.**—Keeper's cottage and public conveniences at Langdon Hills. County Land Agent, 69, Duke-st., Chelmsford.

**JUNE 16.**

***Canterbury City.**—Alterations to Marlowe Theatre, St. Margaret's-st. L. Hugh Wilson, City Architect. Dep. £2 2s.

**JUNE 17.**

**Walton and Weybridge U.D.C.**—Alterations to Appe-ct. sewage pumping station. E. & S., Council Offices, Walton-on-Thames.

**JUNE 19.**

***Sawbridgeworth U.D.C.**—Five pairs of houses and 2 pairs of bungalows. H. G. Campion, C. Dep. £2 2s.

**JUNE 20.**

**Docking (Norfolk) R.D.C.**—Erection of 12 houses and six bungalows. G. E. Gibson, housing officer, Council Offices, Docking, King's Lynn. Dep. £2 2s.

**JUNE 22.**

***Glasgow Corporation.**—416 flats at Milton. T.C., City-chbrs. Dep. £5 5s.

**JUNE 23.**

***Camberwell B.C.**—17 flats and 12 maisonettes at Site 45 (Barry-rd.). B.E. & S. (Room 11), Town Hall. Dep. £2 2s.

**JUNE 26.**

***Bridlington T.C.**—63 houses at West Hill estate. B.E. & S., Town Hall. Dep. £5 5s.

***Harpenden U.D.C.**—19 houses at Batford (North) estate. C., Harpenden Hall. Dep. £1 1s.

***States of Guernsey.**—32 houses at Courtil St. Jacques (Mon Plaisir), St. Peter Port. G. Heggs, States E., States Office. Dep. £1.

**JUNE 28.**

**Stanley (Yorks) U.D.C.**—Erection of 42 houses on the Coach-rd. housing site. E. & S., Council Offices, Coach-rd., Outwood. Dep. £2 2s.

**JUNE 29.**

***Manchester T.C.**—38 lock-up shops, 38 maisonettes and 38 garages at Portway, Wythenshawe. City A., Town Hall. Dep. £1 1s.

**NO DATE.**

**St. Albans R.D.C.**—Erection of 12 old people's dwellings, Offa's-way, Wheathampstead. C., 43, Upper Lattimore-rd., St. Albans. Dep. £1 1s.

### PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

**JUNE 12.**

**L.C.C.**—Repainting Hammersmith Bridge. Chief Eng., Room 450D, County Hall, S.E.1. Dep. £2.

### ROADS, SEWERAGE AND WATER WORKS

**JUNE 7.**

***Wycombe R.D.C.**—Footways and verges at 3 estates. J. M. Smith (F.), Architect & S., 100, Easton-st., High Wycombe. Dep. £3 3s.

**JUNE 13.**

**Kingsclere and Whitchurch R.D.C.**—Enlargement of existing sewage disposal works at Breachfield, Burghclere. Lemon & Blizard, consultant engineers, Castle-la., Southampton. Dep. £2 2s.

**JUNE 19.**

**Warmley R.D.C.**—Branch sewerage scheme, comprising sewerage work and two pumping stations within the district, situated in the parishes of Oldland and Bitton. C., Council Offices, Warmley House, Warmley, nr. Bristol. Dep. £5 5s.

## GENERAL BUILDING WORK (LONDON)

**Bermondsey.**—REBUILDING.—Bowden, Son & Partners, F.R.I.B.A., 2, Prebend-st., N.1, have applied to rebuild premises on site of Nos. 120 and 122, and alterations in conversion of Nos. 116 and 118, Bermondsey-st.

**Fulham.**—FLATS.—A scheme, prepared by N. F. Cachemaille-Day & Partners, F.R.I.B.A., 1, Port-hill, Hertford, for the erection of 40 flats on the North End-rd. site, Fulham, has been approved by L.C.C. housing comm. Est. cost £79,360.

**Hackney.**—FLATS, MAISONETTES AND SHOPS.—Messrs. Henry Tanner, F.R.I.B.A., 134, Fenchurch-st., E.C.3, are architects for 349 flats, 10 shops and 10 maisonettes on the Frampton Park-rd. (east) site, Hackney. Est. cost £719,200.

**Hackney.**—FLATS.—L.C.C. housing comm. have approved a scheme for 265 flats, laundry, 12 garages and 131 perambulator stores on the Frampton Park-rd. (west) site, Hackney. Architect is W. A. Cessford Ball, F.R.I.B.A., Grant-

ham House, Putney Heath, S.W.15. Est. cost £506,200.

**Hammersmith.** — EXTENSIONS. — L.C.C. have approved proposal of H. C. Smart & Partners, L.R.I.B.A., 120, Moorgate, E.C.2, for extension to factory at 4 and 5, Hythe-rd., N.W.10.

**Hampstead.** — DWELLINGS. — Boro' E. & Housing A. have submitted plans for erection of 25 dwellings on the Lawn-rd. housing scheme.

**Lewisham.**—FLATS.—L.C.C. housing comm. have approved plans by T. Hansford White, F.R.I.B.A., 14a, Cavendish-pl., Cavendish-sq., W.1, for erection of 80 flats on the Beckenham Hill-rd. site, Lewisham. Est. cost £153,500.

**Roehampton.**—SCHOOL.—L.C.C. architects have prepared plans for a c.p. school at Roehampton employing standard steel frame construction. Est. cost £142,600.

**St. Pancras.**—SCHOOL.—L.C.C. ed. comm. propose erection of c.p. school, using a standard steel frame construction, on the combined sites of Fleet and Mansfield-rd. schools, St. Pancras, at an est. cost of £99,325. Plans by L.C.C. architects.

**Stoke Newington.**—DAY NURSERY.—L.C.C. architects have prepared plans for the erection of a temporary day nursery on the Springdale-rd. site. Est. cost is £15,550.

**Walthamstow.**—YOUTH CENTRE.—Mauger and May, FF.R.I.B.A., 25, Marylebone-rd., N.W.1, propose to erect a youth centre adjoining the Handsworth-ave. Methodist Church.

**Wandsworth.**—SCHOOL.—L.C.C. ed. comm. propose erection of a c.p. school in Standen-rd., Wandsworth, employing a standard steel frame construction, at an est. cost of £73,675. Plans by L.C.C. architects.

**Woolwich.**—WAR DAMAGE REPAIRS.—L.C.C. welfare comm. propose to repair and adapt the war-damaged south-eastern block of the Woolwich Institution to provide additional accommodation for about 170 persons, at an est. cost of £16,650. Plans by L.C.C. architects.

## (PROVINCIAL)

**Accrington.**—T.C. approved plans for: Alterations at Griffins Head Hotel, Huncoat; alterations at Willow Mount Working Men's Club.

**Belper.**—R.D.C. propose 30 houses at Crich.

**Birmingham.**—T.C. propose adaptation of Astley Hall as special school, at £10,000.

**Blackpool.**—E.C.'s 1951 programme includes following schools:—Little Marton Infants, Our Lady and St. Cuthbert's R.C. Prim. and Sec. Sch. at Cherry Tree-rd. Boro' E., A. S. Hamilton.

**Blackpool.**—B.C. approved plans for:—64 houses, Mexford-av., for H. Matthews, c/o R. Fielding & Son, Stanhope-rd., Blackpool.

**Blaydon.**—Electricity Board propose power-stations at Blaydon, Co. Durham, and Blyth, Northumberland.

**Brierley Hill.**—T.C. approved erection of community centre at Wallheath.

**Bullingdon.**—R.D.C. propose 20 houses at Aston Rowant; six at Great Haseley; 16 at Tetsworth; 12 at Dorchester; eight at Warborough; four at Cuxham; and eight at Chinnor.

**Bullingdon.**—R.D.C. propose houses at Old Marston, Oxford.—M.A. withdrew objections to use of Manor Farm site, Horspath, Oxford, for housing.

**Clayton-le-Moors.**—U.D.C. propose further 20 houses at Fields Bottoms estate.

**Corby.**—T.C. seek M.H. approval for 2,550 houses at Lodge Park estate. Completion in four years. Plans by Surveyor, D. W. Greaves.

**Derbyshire.**—C.C. propose adaptation of "The Lindens," Matlock, as home for aged, at £8,500. County A., F. H. Crossley.

**Dudley.**—B.C. approved layout for section 1 (164 houses) at Sledmore estate. Tenders shortly. Architects, Webb, Gray, High-st., Dudley.

**Durham.**—C.C. to carry out alterations to Seaham fire station, at £9,000. Plans by County A., Court-la., Durham.

**Earls Barton.**—A. Barker & Sons, Ltd., propose extensions on new site.

**Ellesmere Port.**—Lobitos Oilfields, Ltd., propose fire station.

**Felling (Co. Durham).**—M.H. has approved U.D.C.'s plans for 50 houses near Wardley Hall. Builders, G. Wimpey & Co., Ltd., Orchard House, Jesmond, Newcastle-on-Tyne.

**Gateshead.**—T.C. to erect 79 houses on Lyndhurst estate and 14 houses and 12 flats on Fanny Pit Beacon Lough site.—Clarke, Chapman & Co., Ltd., Victoria Works, St. James's-rd., Gateshead, are considering erection of laboratory, boiler-house, etc.

**Hepton (Yorks).**—U.D.C. approved plans by T. Stansfield, 117, Blackhouse-rd., Huddersfield, for eight houses at Underbank, Charlestown. — Boro' A. to submit plan for eight aged persons' dwellings at West Laithe and prepare layout for land at Hepton-dr., Hepstonstall.

**Ince.**—U.D.C. propose 12 aged persons' bungalows on Petticoat-la. site.

**Lancs.**—E.C. seek loan of £11,462 for adaptation of "Broad Oak" Children's Home, Accrington. County A., G. Noel Hill.

**Leeds.**—Regional Hospital Board propose alterations to "F" block Bingley Hospital, to provide additional accommodation for nurses.

**Leigh.**—T.C. propose 20 houses at Hand-la and further 68 houses and 20 flats at Brickhouse Farm.

**Market Drayton.**—R.D.C. propose eight houses at Langley Dale site and 12 at Wistanswick.

**Matlock.**—U.D.C. approved plans for:—Accommodation at Ernest Bailey Residential Nursery for Church of England Children's Society.—Wood mill at Alfreton-rd., Tansley, for C. Gregory.—Alterations to Crabtree Inn, Smedley-st., for Home Brewery Co., and at Church Inn, Darley Dale, for Hansons Brewery.

**Middlesbrough.** — Garbutt, Archibald and Archibald, Albert-rd., Middlesbrough, are architects for proposed alterations to Grange Working Men's Club, Grange-rd., Middlesbrough; vicarage in Farndale-rd., and 16 pairs of houses in Malvern-dr. and Holbeck-ave., for T. Duncanson and Sons, Ltd., and petrol station for Appleby and Dowling, builders, Beechwood, Acklam, Middlesbrough.—T. Phillips, Son and Co., Ltd., are to build petrol station, North-rd., to plans by Kitching and Co., 21, Albert-rd., Middlesbrough.—Stanton Ironworks to build steaming chamber, washrooms and office at Cochrane Foundry, Cargo Fleet.—Plans for second stage of Berwick Hills housing scheme, including 500 new houses, have been prepared by Boro' E. (J. A. Kenyon).—Plans have also been approved for 30 houses in Glendale-rd. and Easby-ave., for T.C.—Dean Brothers, builders, Longlands-rd., Middlesbrough, are to erect six houses in Ullswater-ave. and 14 in Ambleside-gr.

**Newcastle-on-Tyne.**—Cackett, Burns Dick and McKellar, 21, Ellison-pl., Newcastle-on-Tyne, have prepared plans for alterations in Barrack-rd., for Taylor Dunford & Co., Ltd.—C.W.S. Architects' Dept., 90, Westmorland-rd., Newcastle-on-Tyne, have prepared plans for warehouse, etc., in Scrogg-rd. and Highfield-pl. for Walker Co-op. Society.—City A., 18, Cloth Market, Newcastle, has prepared plans for dental surgery for Ed. Com. at Byker Hill East End Health Centre.

**Northampton.**—B.C. approved plans for:—12 houses, Lyncrest-av., for Chowns, Ltd., 63, Edinburgh-rd.—Garage and showrooms, 15-17, Sheep-st., for Derngate Motor Co., Ltd., Bedford-pl.—Office block, 3, Spencer-par., for Becke, Green & Stops, Whitworth Chbrs., George-row. —Four shops with flats over, Gloucester-av., for T. Wilson & Son, Ltd., Kettering-rd., Weston Favell.—Factory, Bridge-st. and Cattle Market-rd., for Norriss & Wayys, 87, Military-rd.

**Northumberland.**—C.C. considering erection of fire stations at Alnwick and Newburn.—First part of C.C.'s plan for tech. college at Ashington will cost £150,000.—Cackett, Burns Dick & McKellar, 21, Ellison-pl., Newcastle-on-Tyne, have been appointed architects by C.C. for Seaton Burn Sec. Mod. Sch.

**Nottingham.**—E.C. approved preliminary plan by City E., R. M. Finch, for sec. sch. at Padstow-rd., Bestwood, at £199,790.

**Notts.**—E.C. approved preliminary plans for Nottingham and District Tech. College, Shakespeare-st., Nottingham, at £1,290,000.

**Ogwen.**—R.D.C. propose 12 houses at Penrhos and further 12 at Mynydd Llandegai.

**Oswaldtwistle.**—U.D.C. propose improvements to town hall and assembly hall, and 22 houses on Rowan-av. estate. Surveyor, T. D. Manning.

**Oxford.**—Regional Hospital Board approved conversion of Longworth House, Faringdon, for aged, at £6,600. Pathological lab. at Kettering General Hospital.

**Oxford.**—Bullingdon Estates Com. have acquired large part of Wood Farm, The Slade, Headington, for housing purposes and two schools.

**Rotherham.**—E.C. seek loan of £376,500 for Oakwood Sec. Tech. Sch.

**Runcorn.**—U.D.C. approved layout for 346 houses at Town Hall estate. Junior and nursery sch. at Penn-la., and Prim. Infants' sch. at Picow Farm-rd., for Cheshire C.C.

**Runcorn.**—U.D.C. to negotiate with Rapid Brick Construction Co., Ltd., for 18 houses, Lambsickle-la.

**Salford.**—Plans for £750,000 extensions to Tech. College to be prepared by Lancs County A., G. Noel Hill, Preston.

**Salop.**—E.C. propose infants' sch. at Newport. County A., A. G. Chant.

**Sheffield.**—T.C. approved layout plans by City A., for Littledale neighbourhood unit (No. 1) extension and Bowden Houstead neighbourhood unit. Appointed Hadfield, Cawkwell & Davidson, 279, Glossop-rd., Sheffield, as architects for proposed Junior Sch. at Acre's Hill.

**Shrewsbury.**—Memorial Chapel proposed at St. Chad's Church, at £6,000. Architect, Bernard A. Miller, Liverpool.

**Stafford.**—T.C. approved layout for new housing scheme at Manor estate.—Propose new bus station, at £33,789.

**Stanley (Co. Durham).**—U.D.C. considering erection of 10 shops, etc., at South Stanley.

**Stone.**—U.D.C. seek sanction to erect houses at Lichfield-rd. site.

**Sunderland.**—S. W. Milburn and Partners, 9, Esplanade, Sunderland, are architects for proposed vicarages at St. Peter's on Thorney-cl. estate and also in Springwell-rd.—W. and T. R. Milburn, 17, Fawcett-st., Sunderland, have prepared plans for a pattern store for the Sunderland Forge and Engineering Co., Ltd., Pallion Works.—Working drawings to be prepared by Boro' E. for eastern part of proposed Farringdon Hall housing estate.—William Jackson and Sons, Ltd., wine and spirit merchants, Sunderland, propose extensions to "Bridge Hotel." —T.C. received sanction to borrow £341,021 for 276 houses on Pennywell estate.

**Todmorden.**—B.C. to invite tenders for houses at Harley Wood.

**Tyldesley.**—U.D.C. approved layout plan for 44 houses and to invite tenders for 24 houses at Shakerley estate.

**West Hartlepool.**—Hartlepools Co-op. Society, Ltd., have permission to build workshops in Thompson-st.

**Whitehaven.**—T.C. approved layout for 82 "Easiform" and 38 traditional houses at Valley estate.

## "THE BUILDER" PRICES

### COPPER

The Ministry of Supply announces that on May 18 the price of electrolytic copper was increased from £162 to £164 per ton, delivered consumers' works.

### BRASS TUBES

The Brass and Copper Tube Association announce that in consequence of the increase in the controlled price of copper which came into operation on May 18, basis prices of tubes were increased as follows:—

| | *Basis Price.* |
|---|---|
| Copper tubes increased by ½d. = | 19½d. per lb. |
| Brass tubes increased by ½d. = | 17½d. per lb. |
| Copper-nickel tubes 70/30 increased by ½d. = | 24½d. per lb. |
| Other alloys | Prices on application. |

The list prices of Condenser Ferrules were also increased as follows:

Brass and aluminium brass ferrules increased by ½d. per lb.

Copper-nickel ferrules 70/30 increased by ½d. per lb.

The Brass and Copper Tube Association announce that in consequence of the increase in the controlled price of copper which came into operation on May 19, basis prices of tubes have been increased as follows:

| | *Basis Price.* |
|---|---|
| Copper tubes increased by ½d. = | 19½d. per lb. |
| Brass tubes increased by ½d. = | 17½d. per lb. |
| Copper-nickel tubes 70/30 increased by ½d. = | 24½d. per lb. |
| Other alloys | Prices on application. |

The list prices of Condenser Ferrules have also been increased as follows:

Brass and aluminium brass ferrules increased by ½d. per lb.

Copper-nickel ferrules 70/30 increased by ½d. per lb.


## THE INSTITUTE OF BUILDERS

# EXAMINATIONS

The next Examinations for the Institute's Diplomas will be held as follows:—

**Licentiate Diploma Examination.**

September 4th, 5th and 6th, 1950.

**Associate Diploma Examination.**

September 4th, 5th, 6th, 7th and 8th, 1950.

Latest date for sending in applications:—June 30th, 1950.

Syllabuses and Entry Forms will be forwarded free upon application to:—

**The Secretary,**
**The Institute of Builders,**
**48 Bedford Square,**
**London, W.C.1**

from whom also may be obtained past examination papers with drawings at 10s. a set for either examination.

**Worcs.**—B.C. received following starting dates for schools:—Kidderminster & Lickey (September, 1950); Alvechurch & Oldbury College of Further Education (November, 1950); Stourport Sec. Mod. (early 1951). County A., L. C. Lomas, F.R.I.B.A., County Offices, Worcester.

**Workington.**—B.C. approved extensions to offices at Gas Works for Northern Gas Board.

**Wrexham.**—T.C. proposes further 800 houses, shopping centre, and other amenities.

## TENDERS

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government Departments.*

**Bagshot.**—24 houses at Chertsey-rd., Chobham, for R.D.C. Architect, J. Emberton, F.R.I.B.A., Quantities by Franklin & Andrews:—

| | |
|---|---|
| E. P. Wickens & Sons, Ltd., 83, Church-rd., Addlestone | £31,285 |
| The Miles Construction Co., Ltd., Stanton House, St. Mark's-hill, Surbiton | 29,947 |
| A. Cavey, Lane End, Knaphill | 28,677 |
| Day & Son (Builders), Ltd., 130, Terrace-rd., Walton-on-Thames | 27,839 |
| Waymins, Ltd., Luddington-ave., Virginia Water | 27,754 |
| A. & J. Simmons, Old Woking | 27,346 |
| Thomas Higgs & Co., Ltd., Woking | 27,156 |
| G. H. Anscomb, Bagshot-rd., West End, Woking | 26,945 |
| E. P. Cheeseman & Sons, Chertsey-rd., Chobham | 26,945 |
| *Otterway & Try, The Causeway, Egham | 26,046 |

**Blyth.**—Erection of 77 houses on the Cowpen-rd. housing estate, for T.C. D. W. Foster, B.E.: Direct Labour, £82,974.

**Carlton.**—20 flats in five blocks at Cavendish-rd./Alpine-cres. site, for U.D.C. E. and S., Council House, Burton-rd. Quantities by H. J. Turner, F.R.I.C.S.: *M. D. Sweeney & Palmer, Ltd., Beechdale-rd., Aspley, Nottingham, £16,498

**Chirk.**—Pithead baths at Ifton Colliery, for N.C.B.: Holland & Hannen and Cubitts, Ltd., London.

**Clackmannonshire.**—New works for Archibald Arrol & Sons, Ltd., Alloa Brewery, Blyth & Blyth, architects, 135, George-st., Edinburgh: Steel structural works, *Frederick Braby & Co., Ltd., Springburn, Glasgow; principal contractors, *Stewarts Granolithic Co., Ltd,, Edinburgh.

**Coventry.**—Adaptations and additions to Keresley Grange, Brownshill Green-rd., for T.C. J. Roland Sidwell (A.), 27, Union-st.: *H. Darbyshire & Son, Ltd., Burnsall-rd., Canley, Coventry, £17,686.

**Derbyshire.**—Adaptation of "The Elms," Chapel-en-le-Frith, for C.C.: C. E. Gaunt & Sons, Ltd., Chesterfield.

**East Retford.**—Eight houses at West Stockwith, Haughall Farm, for R.D.C.: *J. W. Dawson, Ltd., £11,419.

**Felling (Co. Durham).**—Erection of 36 houses near Wardley Hall, for U.D.C. D. W. Green, Housing A.: Direct Labour, £44,030.

**Glasgow.**—126 houses at Milton, for Corporation. Archibald A. Jury (F.), City Housing Offices, Glasgow Cross, The Trongate, Glasgow: *Myton, Ltd., Mossend, Bellshill, Lanarkshire. £189,195.

**Glasgow.**—Alterations and additions to the Logan and Johnstone College, for the Corporation. John MacNab (F.), 129, Bath-st., Glasgow, W.C.2: Excavation, brick, building and allied works, *Hunter & Clark, Ltd., £18,387; joinery, carpentry and allied works, *James Laidlaw & Son, Ltd., £3,495; glazing and allied works, *The City Glass Co., Ltd., £359; plaster, lathing, cement and allied works, *Robert Jolly & Sons, Ltd., £804; plumber, sanitary engineering and allied works, *D. Stewart & Sons, Ltd., £1,318; tile, terrazzo and allied works, etc., *Toffolo, Jackson & Co., Ltd., £1,158.

**Hartlepool.**—Houses for T.C. Eight in Hart-rd.: Direct Labour; 11 houses: *Watt Bros., Ltd., West Hartlepool; 14 houses: *Rennie & Sons, West Hartlepool.

**Holyhead.**—28 flats at London-rd. site, for U.D.C.: *Jones & Lloyd, Kingsland-rd., Holyhead.

**Hornsey.**—24 flats, Park-rd., N.8, for T.C. J. H. Melville Richards, B.E. & S. Quantities by Selby & Sanders, 25, Victoria-st., S.W.1: *W. H. Streeter, Ltd., Tudor-rd. Works, Hampton, Middx, £41,676.

**Hornsey.**—Nine flats at Middle-la., Crouch End; six flats, Palace-rd., N.8; and six flats, Carysfort-rd., N.8; for T.C. J. H. Melville Richards, B.E. & S. Quantities by Selby & Sanders, 25, Victoria-st., S.W.1: *F. W. Padwick, 141, Ballards-la., Finchley, N.3, £36,801.

**Hornsey.**—Nine flats at Mount View-rd., by Oakfield-rd., scheme No. 25; 17 flats and council stores at Mount View-rd., by Granville-rd., scheme No. 26; for B.C. J. H. Melville Richards, B.E. & S. Quantities by Selby & Sanders, 25, Victoria-st., S.W.1: *W. F. Marshall, Ltd., 71, Stradbroke-gr., Buckhurst Hill, Essex, £15,160 and £32,250.

**Houghton-le-Spring.**—Conversion of old rectory buildings into council offices, for U.D.C. V. J. Hunter, S.: *Direct Labour, £9,150.

**Islington.**—Erection of 88 flats on a site bounded by Sussex-way, Bavaria-rd., Cornwallis-rd. and Kingsdown-rd., for B.C.:—

| | |
|---|---|
| Rowley Bros., Ltd., N.17 | £171,806 |
| J. Gerrard & Sons, Ltd., Manchester | 169,970 |
| Pitchers, Ltd., N.7 | 166,756 |
| Rice & Sons, Ltd., S.W.9 | 164,822 |
| Geo. Parker & Sons, Ltd., S.E.15 | 164,323 |
| John Mowlem, Ltd., S.W.1 | 163,689 |
| Henry Knight & Sons, Ltd., N.17 | 163,527 |
| A. T. Rowley (London), Ltd., N.17 | 162,123 |
| Harry Neal, Ltd., W.1 | 161,404 |
| Mullen & Lumsden, Ltd., W.C.1 | 160,842 |
| Trollope & Colls, Ltd., W.C.2 | 160,652 |
| Patman & Fotheringham, Ltd., N.1 | 159,321 |
| Allen Fairhead & Sons, Ltd., Enfield | 157,463 |
| Gee, Walker & Slater, Ltd., W.1 | 155,902 |
| *Simms, Sons & Cooke, Ltd., 78, Mount-st., W.1 | 151,513 |

Accepted tender contains a number of errors, the effect of which is to increase price to £153,134.

**L.C.C.**—Provision and erection of prefabricated huts for South-East London technical college and day continuation school:—

| | |
|---|---|
| Stone & Co. (London), Ltd., Croydon | £10,976 |
| W. F. Marshall, Ltd., Buckhurst Hill | 10,815 |
| Drury & Co., Ltd., Camberwell | 10,651 |
| A. J. Dunning & Sons, Woolwich | 10,641 |
| Herbert Richardson & Sons, Erith | 10,605 |
| Thomas & Edge, Ltd., Woolwich | 10,497 |
| J. & C. Bowyer, Ltd., Upper Norwood | 10,459 |
| Norman Wright (Builders), Ltd., Lambeth | 10,458 |
| Clarke, Barton & Co., Ltd., Sutton | 10,377 |
| H. T. Oliver & Sons, Ltd., Wandsworth | 10,285 |
| Whyatt (Builders), Ltd., Wandsworth | 10,257 |
| Henry Kent (Builders), Ltd., Lewisham | 10,214 |
| Greenaway & Son, Ltd., Camberwell | 10,185 |
| Bridge Walker, Ltd., Lambeth | 9,996 |
| John Harrison (London), Ltd., Lambeth | 9,895 |
| *W. R. Oldham, Ltd., Beckenham | 9,414 |

Architect's comparable estimate is £9,678.

A county primary school in prefabricated construction at Brandlehow-rd., Wandsworth:—

| | |
|---|---|
| J. Garrett & Son, Ltd., Wandsworth | £38,725 |
| Galbraith Bros., Ltd., Holborn | 38,105 |
| A. Roberts & Co., Ltd., Westminster | 37,738 |
| Kirk & Kirk, Ltd., Wandsworth | 37,036 |
| William Lacy (Hounslow), Ltd., Hounslow | 36,879 |
| G. T. Crouch, Ltd., Kingston-on-Thames | 36,672 |
| Sloggetts (Contractors), Ltd., Kensington | 35,972 |
| Richard Costain, Ltd., Westminster | 35,801 |
| Leslie & Co., Ltd., Kensington | 35,313 |
| John Morgan (London), Ltd., Westminster | 34,883 |
| W. J. Simms, Sons & Cooke, Ltd., Westminster | 34,695 |
| C. F. Kearley, Ltd., Hammersmith | 34,688 |
| *H. T. Oliver & Sons, Ltd., Lambeth | 34,351 |

Comparable estimate of architect in private practice responsible for the work is £35,210.

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Second section of Horn Park county primary school, Woolwich:—

| | |
|---|---|
| Halse & Sons, Ltd., Woolwich | £113,568 |
| Rowley Bros., Ltd., Tottenham | 112,450 |
| Lavender McMillan, Ltd., Worcester Park | 112,220 |
| J. Garrett & Son, Ltd., Wandsworth | 111,934 |
| J. & C. Bowyer, Ltd., Wimbledon | 111,749 |
| Amalgamated Building Contractors, Ltd., Wandsworth | 111,635 |
| Kent & Sussex Contractors, Ltd., Sidcup | 111,276 |
| Geo. Parker & Sons, Ltd., Camberwell | 111,248 |
| Prestige & Co., Ltd., Westminster | 110,964 |
| Fred & T. Thorne, Ltd., Lewisham | 110,720 |
| Tersons, Ltd., Finsbury | 110,374 |
| Thomas & Edge, Ltd., Woolwich | 106,668 |
| Thomas Tierney & Co., Ltd., Poplar | 104,294 |
| *E. H. Smith (Croydon), Ltd., Croydon | £100,915 |

Architect's comparable estimate is £103,928.

War damage repairs and improvements at Medburn school, St. Pancras.—

| | |
|---|---|
| F. R. Hipperson & Son, Ltd., Broad Street-pl., E.C.2 | £19,714 |
| Y. J. Lovell & Son, Ltd., Paddington | 19,695 |
| Frank Batty & Smith, Ltd., Paddington | 19,675 |
| Marshall Andrew & Co., Ltd., Westminster | 19,624 |
| Lavender, McMillan, Ltd., Worcester Park | 19,548 |
| J. Jarvis & Sons, Ltd., Westminster | 19,457 |
| Yeomans & Partners, Ltd., St. Marylebone | 19,375 |
| Patman & Fotheringham, Ltd., Islington | 18,911 |
| Sloggetts (Contractors), Ltd., Kensington | 18,379 |
| W. S. Barton & Co., Ltd., Holborn | 17,811 |
| W. J. Marston & Son, Ltd., Fulham | 17,456 |
| *H. T. Oliver & Sons, Ltd., Lambeth | 16,111 |

Comparable estimate of architect in private practice responsible for the work is £16,237.

Construction of six blocks, containing 129 flats, and other works at Bandon-rd. site, Bethnal Green:—

| | |
|---|---|
| C. Miskin & Sons, Ltd., St. Albans | £264,516 |
| Trollope & Colls, Ltd., Holborn | 262,928 |
| Wates, Ltd., Norbury | 261,983 |
| F. & H. F. Higgs, Ltd., Lambeth | 261,642 |
| A. T. Rowley (London), Ltd., Tottenham | 259,800 |
| Leslie & Co., Ltd., Kensington | 258,672 |
| Taylor Woodrow Construction, Ltd., Southall | 257,896 |
| Halse & Sons, Ltd., Woolwich | 257,538 |
| Gee, Walker & Slater, Ltd., Westminster | 253,333 |
| Allen Fairhead & Sons, Ltd., Enfield | 253,145 |
| C. F. Kearley, Ltd., Chiswick | 249,134 |
| *Lavender, McMillan, Ltd., Worcester Park | 247,881 |

Comparable estimate of appointed architects, Messrs. de Metz and Birks, is £255,454.

Construction and delivery of pontoons for landing stages for use during Festival of Britain, at the central exhibition and at the Festival Gardens in Battersea Park:—

| | |
|---|---|
| R. Green & Silley Weir, Ltd., North Woolwich. Tender submitted for certain works only. | |
| Harland & Wolff, North Woolwich | £52,660 |
| R. G. Odell, Ltd., Shepperton | 48,369 |
| *James W. Cook (Wivenhoe), Ltd., Wivenhoe | 41,000 |

Chief engineer's comparable estimate is £50,000 (subject to M.T. approval).

Painting and cleaning at various schools.—Bath-st., Finsbury: *R. J. Adams, Ltd., Finsbury, £5,259; Gordon secondary school, Woolwich: *P. Miller & Son, Dartford, £5,032; Hammersmith school of building and arts and crafts: *John Lewis Building, Ltd., Perivale, £6,509; Hansley school, Islington: *C. & T. Painters, Ltd., Willesden, £5,271; Moreland-st., school, Finsbury: *Holland & Hannen and Cubitts, Ltd., St. Pancras, £6,339; Poplar technical college: *J. & J. Dean, Ltd., Leyton, £5,700; Rangefield primary and Downham secondary school, Lewisham: *J. Scott Fenn, Ltd., Woolwich, £5,006; Ravenstone school, Wandsworth: *A. J. Wait & Co. (Wallington), Ltd., Wallington, £6,400; Salter's Hill school, Lambeth: *Clarke, Barton & Co., Ltd., Belmont, Surrey, £5,020; Walworth secondary school, Southwark: *Drury & Co., Ltd., Camberwell, £5,217; Whitmore school, Shoreditch: *Whyatt (Builders), Ltd., Balham, £5,857; Tottenham-rd. school, Hackney: *King & Co. (Builders), Ltd., Leytonstone, £7,900.

**¶London (Admiralty).**—Particulars of contracts placed by Civil Engineer-in-Chief's Dept., Admiralty:—

*Portland*: H.M. Naval Base, Construction of jetty, A. E. Farr, Ltd., Station-rd., Westbury, Wilts.

**¶London (Air Ministry).**—List of new contracts to the value of £500 or over for week ended May 20:—

*Building work:* Pochin (Contractors), Ltd., Middlewich, Cheshire; W. B. & F. T. Archer, Handsworth, Birmingham; F. Parkinson & Son, Ltd., Blackpool. *Maintenance work:* James Blake, Ltd., Aberdeen; A. Richmond & Sons, Retford, Notts; G. G. Middleton & Sons, Ltd.,

Worksop, Notts. *Steam-raising and coal-handling plant installation:* Comyn Ching & Co. (London), Ltd., London, W.C.1.


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¶**London (M.O.W.).**—Contracts placed by M.O.W. for week ended May 13:—

*London*: Cornwall House, Stamford-st., S.E., Occupation services, J. Garrett & Son, Cathles-rd., Balham, S.W.12; Nos. 1, 2, 4 to 15, 19 to 37, Bryanston-sq., W.1, External repairs, painting and internal decorations, Ernie Bayliss, Ltd., 57, St. Stephen's House, S.W.1. *Aberdeenshire*: North Silver-st., Aberdeen, Hutted extension, James Leith, jun., 127, Causewayend, Aberdeen. *Co. Durham*: M.N.I., Horden, Provision of additional accommodation, R. Matthews & Co., 25, Villiers-st., Sunderland. *Huntingdonshire*: Sawtry C.P. school, Erection of additional class-rooms, Stanley Brawn, Ltd., 27, Ermine-st., Huntingdon. *Lincolnshire*: M.N.I., Saltergate, Lincoln, Adaptations and alterations, Wm. Wright (Lincoln), Ltd., Park-st., Lincoln. *Staffordshire*: Stafford, Erection of 28 houses, M. A. Boswell (Contractors), Ltd., School-st., Wolverhampton. *Surrey*: Ministry of Food, Public Halls, George-st., Croydon, Occupational services, Truett & Steel, Ltd., High-st., Thornton Heath. *Warwickshire*: Sladefield-rd. school, Ward End, Birmingham, Erection of temporary school buildings, W. B. & F. T. Archer, Holyhead Works, Rookery-rd., Handsworth, Birmingham.

¶**London (War Dept.).**—Works contracts placed by War Dept. during week ended May 13:—

*Lincs*: Miscellaneous work, Exor. G. H. Higkin, Grimsby. *Yorkshire*: Building work, S. Owst & Son, Ltd., Hull; Civil engineering work, Arthur Waterman, Ltd., Leeds.

*Leicestershire*: Hutting work, H. Hammond & Son, Ltd., Loughborough. *Sussex*: Miscellaneous work, G. F. Baldwin, Kemsing. *Kent*: Hutting work, C. I. Epps & Sons, Ltd., Ashford. *Herts*: Building work, The Universal Housing Co., Ltd., Rickmansworth.

**Morley.**—16 houses at Albert-rd. estate, for T.C. Housing Director, National Provincial Bank-chbrs., Queen-st.: *D. F. Mann & Son, 33, Dolphin-la., Thorpe, nr. Rothwell, £17,694.

**Newcastle-on-Tyne.**—Erection of six houses in Westacres-cres.: *Harry Kindred, 371, West-rd., Newcastle-on-Tyne.

**Newcastle-on-Tyne.**—Works extensions in Waterloo-st. and Peel-la., for Kodak, Ltd.: *Stephen Easten, Ltd., Westgate-rd., Newcastle-on-Tyne.

**Newcastle-on-Tyne.**—Erection of factory in Glasshouse-st., for British Engines, Ltd.: *R. Bowey & Son, Back Raby-st., Newcastle-on-Tyne.

**Nuneaton.**—20 aluminium bungalows at Ramsden-av., for B.C.: *A. W. Hawkesley, Ltd., Hucclecote, Glos, £22,581.

**Runcorn.**—Six houses at Saxon-rd., for U.D.C.: *Mr. W. Peak, 17, Church-st., Warrington, £9,266.

**Sheffield.**—Works for T.C. 42 "Malthouses" at Parsons Cross estate extension: *W. Malthouse, Ltd., £76,488; 52 flats at Manor Park estate: *H. Dernie & Sons, Sheffield, £45,655.

Police houses.—Two at Knowle-av.: *A. W. Little, £3,450; two at Alison-cres.: Wilson Middleton, £2,968; two at Robertson-rd. and two at Ben-la.: *W. Wigley & Son, £2,936 and £2,849; four at Hollybank-dr.: *F. Clifton, £5,584; four at Halsall-rd.: Richardson Buckley, Ltd., £5,308.

**Silsden.**—20 houses at Dradishaw estate, for U.D.C. Mason & bricklayer: *J. Whittingham & Son, Ltd., £14,781; joiner: *Hanson & Bailey, £5,371.

**South Shields.**—Erection of canteen and divers' store at South Pier Works, for Tyne Improvement Commission: *W. H. Oliver, Ltd., Newcastle-on-Tyne.

**Swansea.**—136 "No Fines" houses on Part 3 of Gendros estate, for C.B.: *George Wimpey & Co., Ltd., £188,099 (subject to M.H. approval).

**Swansea.**—Castle-st. reconstruction: Contract No. 4 (Nos. 27 and 28), for C.B. Architect, O. S. Portsmouth, F.R.I.B.A., 7, Wind-st., Swansea. Quantity Surveyor, B. W. Ellis, F.R.I.C.S., 2, De la Beche-st., Swansea: †E. Turner & Sons, Ltd.

**Worcs.**—Houses for C.C. Two at Aggborough-cres. estate, Kidderminster; two at Victoria-rd., Malvern; and two with office at Gibanks-rd., Stourbridge: *J. Taylor & Son, Ltd., Lye, £6,632, £7,718, and £4,557.

**Worksop.**—Houses for T.C.: *J. H. & W. E. Illett, £23 837 (20); *G. G. Middleton & Son, Ltd., £21,127 (18); *J. T. Smith, £20,563 (18); *Adam Eastwood & Sons, £28,610 (22); *J. J. Jackson, Ltd., £12,000 (10).


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